



DANAS 2.x

User Manual

Vers. 1.1 – June 2014

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DANAS INSTALLATION

To install Danas follow the steps:

- deactivate anti-virus
- install Java (if not already installed) downloading the latest free version from www.java.com.
- Execute danas_installer.jar (downloading it from www.i2m.it/Download.html)

We would suggest to install Danas in a folder other than “Program Files”.

To launch Danas execute danas.jar. You'll find it in Danas directory at the end of installation.

WARNING:

If you already have a previous DANAS version, you need to use the uninstall tool and then manually delete 'Danas' folder (usually in C:\ProgramFiles)

MAIN WINDOW

Danas2.x GUI is composed by three main windows: [Maps](#), [Graph](#) and [TimeTable](#).

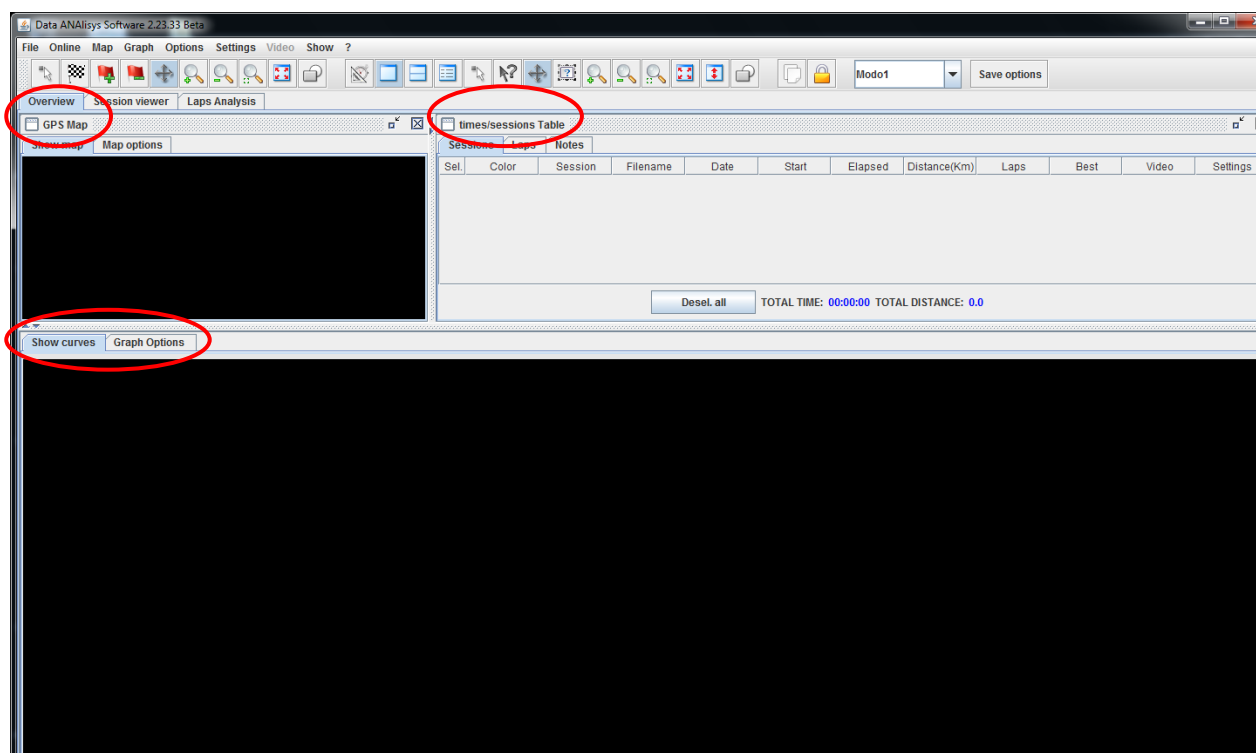


Fig. 1- Main Windows

There are also the optional windows [Video](#), [Graph Values](#) and [Info](#).

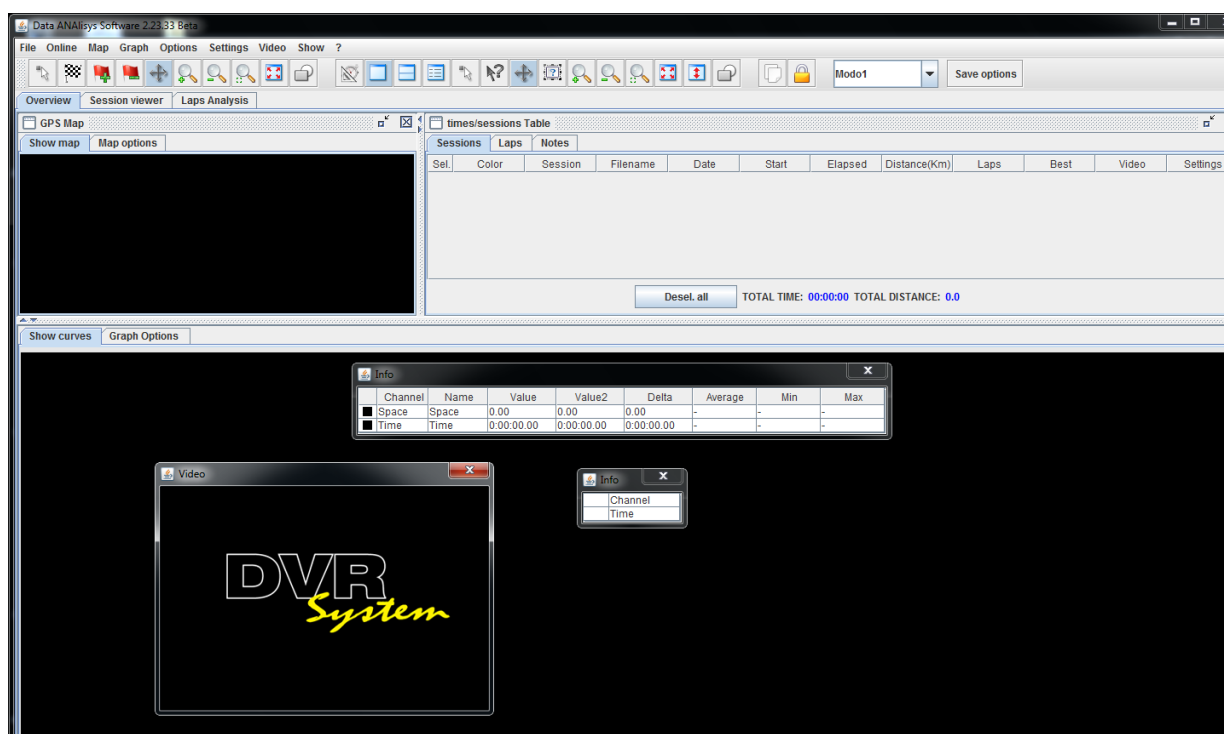


Fig. 2 – Main Windows with Video and Info

The three main windows can be integrated in a whole window [\[Fig.1\]](#) or they can be left floating over the Graph background [\[Fig.3\]](#)

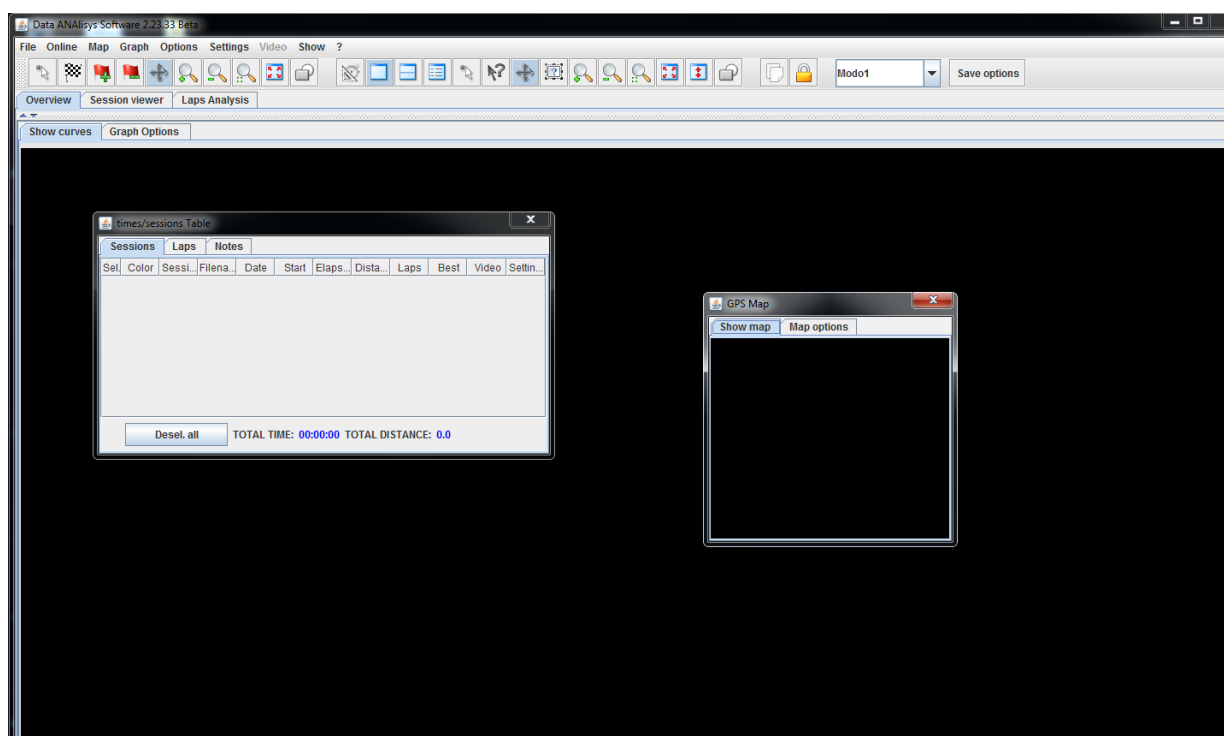


Fig. 3 – Floating windows

In order to let the windows float you have to press the shrink button on each desired window. That window will then float over the background and you can overlap it to the others wherever you want. If you want to fix the window again, you'll have to press the 'close window' button.

You can use the Menu "Show" in order to choose visible windows.

You can also choose the position of the dividers (horizontal and vertical) in order to allow more room to the desired window, you just only need to drag and drop them.

Both dividers positions and visible windows are memorized when exiting Danas, so everything will be restored the same way at the next turn on.

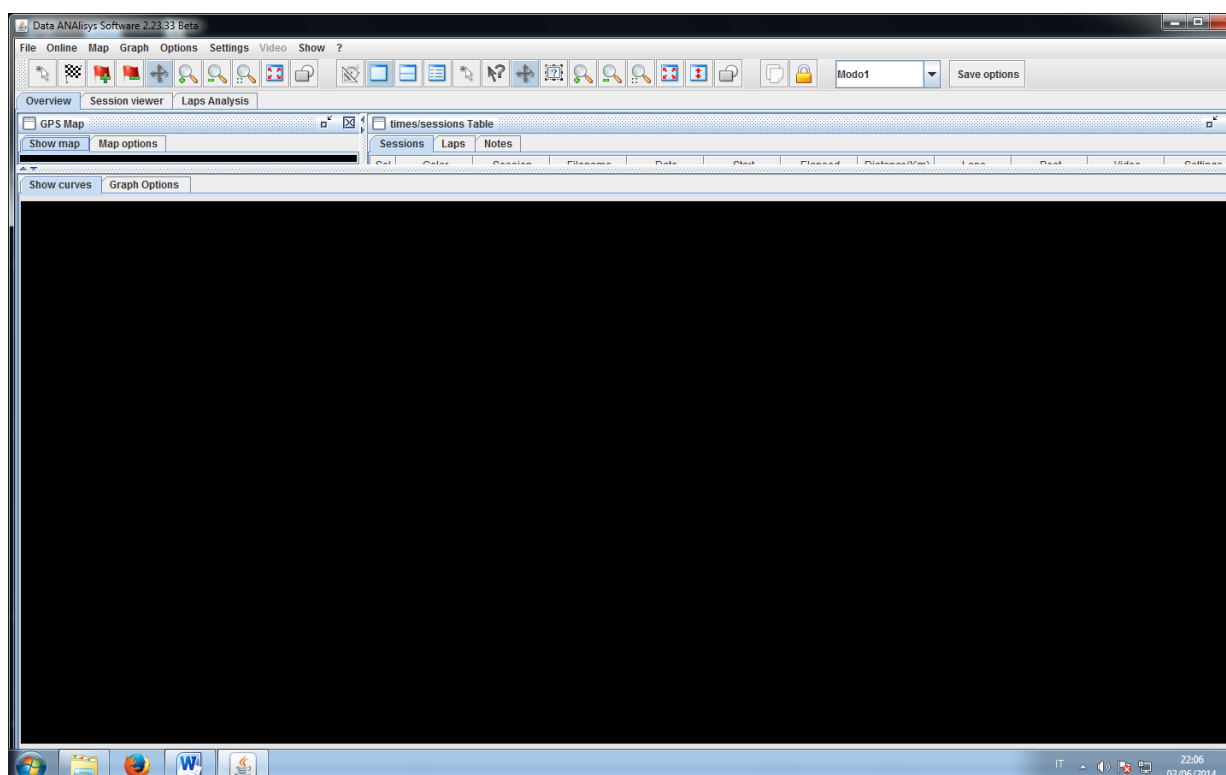


Fig. 4 – Vertical Split minimized

DEFAULT SESSION AND DEFAULT LAP

Default Lap and Default Session are a core parameters for Danas.

You can synchronize Map, Graph and a Video. Let's suppose you have 2 distinct selected sessions with their graphs and their maps, if you load a video to which session would it be synchronized? If we set a cursor on the map, to be synchronous with the graph, which GPS track should it follow? Of which session?

These are only examples of duplicity that can arise when working with Danas instruments. Danas gets rid of the ambiguity defining a default session and a default lap. Depending on the case you are using laps or sessions Danas will have a reference to follow. In the previous example everything would be synchronized with the default Lap/Session.

If you are loading new data, Danas will automatically choose a default Lap and Session, and you can change them as you like (see forward in this Manual: how to set Default Lap/Session).

WARNING: when using cursors or video synchronization, double check which is your default Lap/Session in order to avoid data misunderstandings.

MAP

Map it to show acquired GPS traces.

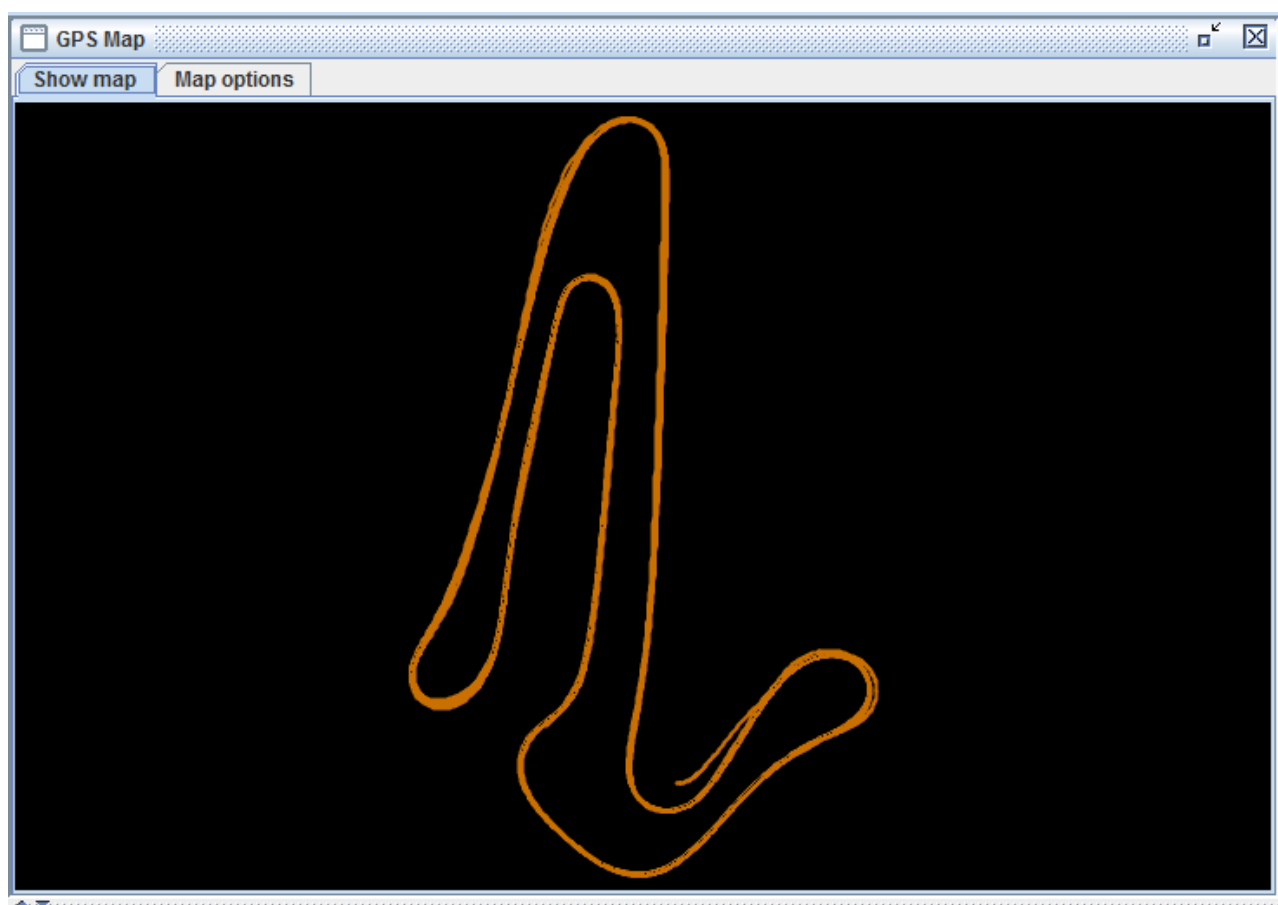


Fig. 5 - Map

By default map is located in the top left corner but you can let it float. You can manage its functionalities with 'MapMenu' or with the appropriate buttons on the icon bar (see forward in this Manual)

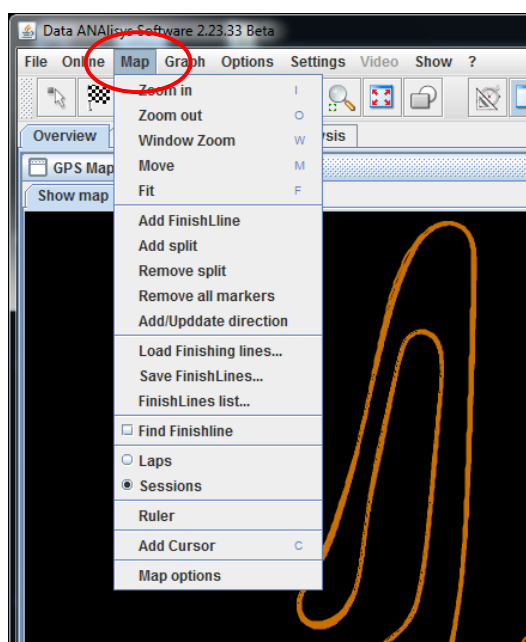


Fig. 6 – Map Menu



Fig. 7 – Map Icon Bar: cursor, add a finish line, add a split, remove spit, move, zoom in, zoom out, zoom window, fit, laps/sessions

On the Map Window you have two tabs, 'Show Map' and 'Map Options'. You can in fact change map properties and choose background color, line thickness, character size...

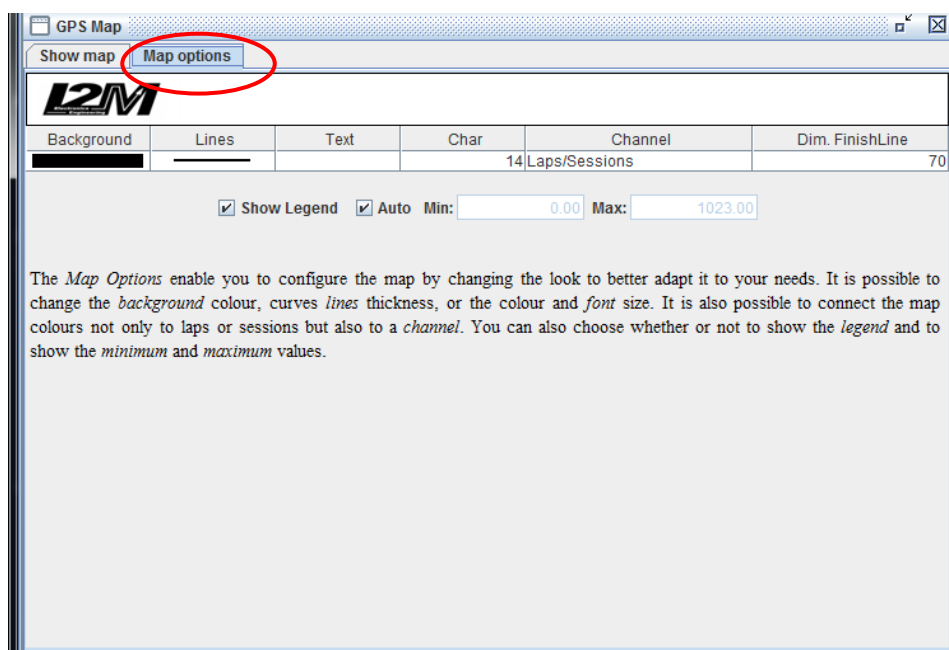


Fig. 8 – Map Options

You can also choose 'Finish Line' size. This is the diameter of the circle, centered on Finish Line coordinates, where GPS tracks need to pass in order to consider that you crossed the finish line. *When you modify Finish Line Size, all the Split Sizes will be modified accordingly.*

With the column 'Channel' you can link each curve to a different coloring feature. By default its value is "Laps/Sessions" that means that each track has the same color of session/lap they belong to. By choosing a channel name you can alternatively choose to link each point to a shade of color related to the values of the acquired channel. For example you can plot GPS Speed colors or acceleration, RMP values or any analog channel.

This functionality is available only in Lap Mode and with less than 6 Laps plotted.

Once the channel has been chosen, the map will be accordingly colored and a legend will appear. Max and min values of the color range can be modified as you like or automatically set by the 'Auto' function. You can hide the legend by the appropriate checkbox.

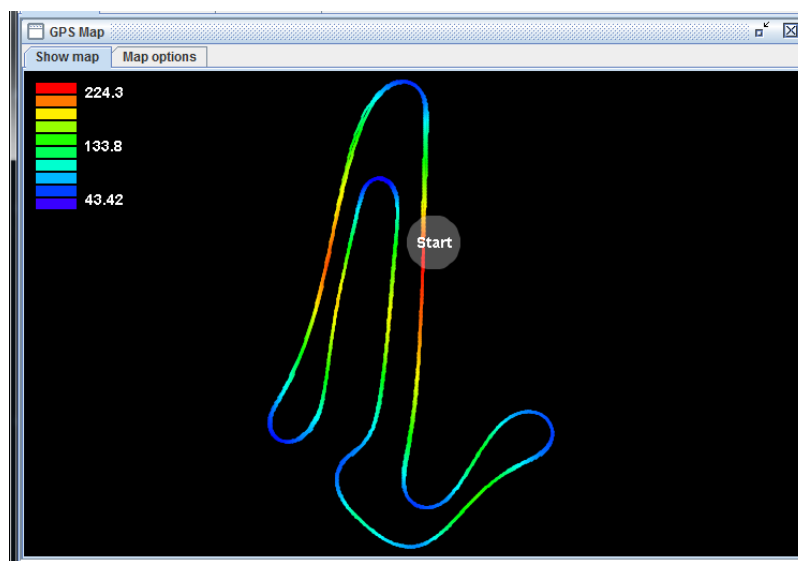


Fig. 9 – Channel Mode: GPS speed (with legend)

By the Map Menu you can set the following functions:

- **Zoom In:** you can zoom in the map, by clicking in one point the map will zoom-in, keeping the selected point as its center.
- **Zoom Out:** you can zoom out the map, by clicking in one point the map will zoom-out, keeping the selected point as its center.
- **Zoom Window:** you can select a rectangle on the map, the selected portion will be zoomed so to fit the available window size.
- **Move:** you can move the map by simply clicking and dragging. You can also zoom in or zoom out using mouse wheel.
- **Fit:** this function will fit the map for all the visible sessions.
- **Add Finish Line:** you can add a Finish Line. By moving the cursor on the map, it will set the size and position of the finish line. Clicking on the map the finish line will be set at the cursor current position. If you need to change its position you only have to set a new one in a different position.

- **Add a split:** you can add splits along the track. All splits should be crossed by all laps and should be set in the right order (i.e. do not set split3 along the track before split2). On the table, in the laps tab, all the splits times will be created. If the split is not valid (not crossed by all alps or in the wrong order) its cell will have a red background.

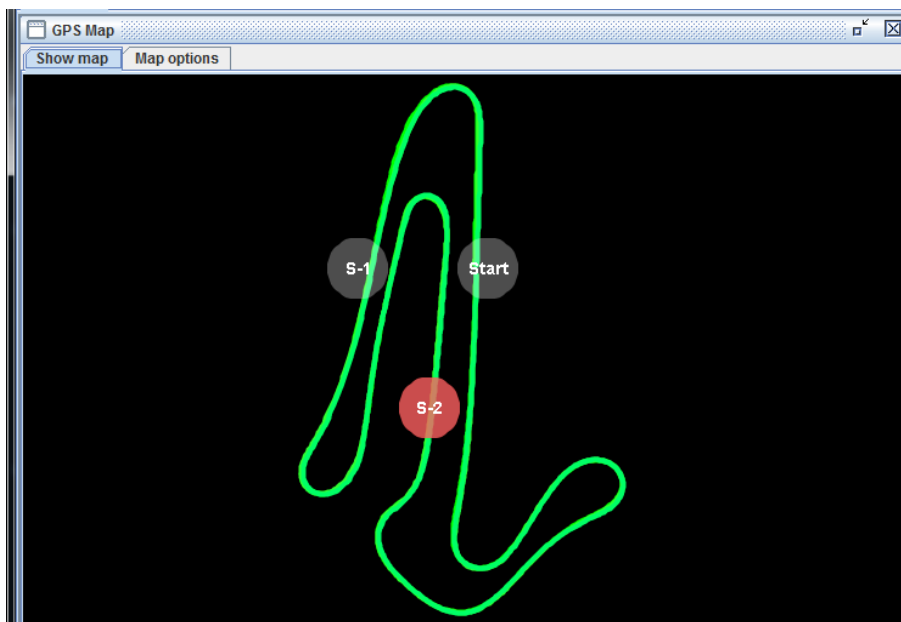


Fig. 10 – Finish Line and Splits

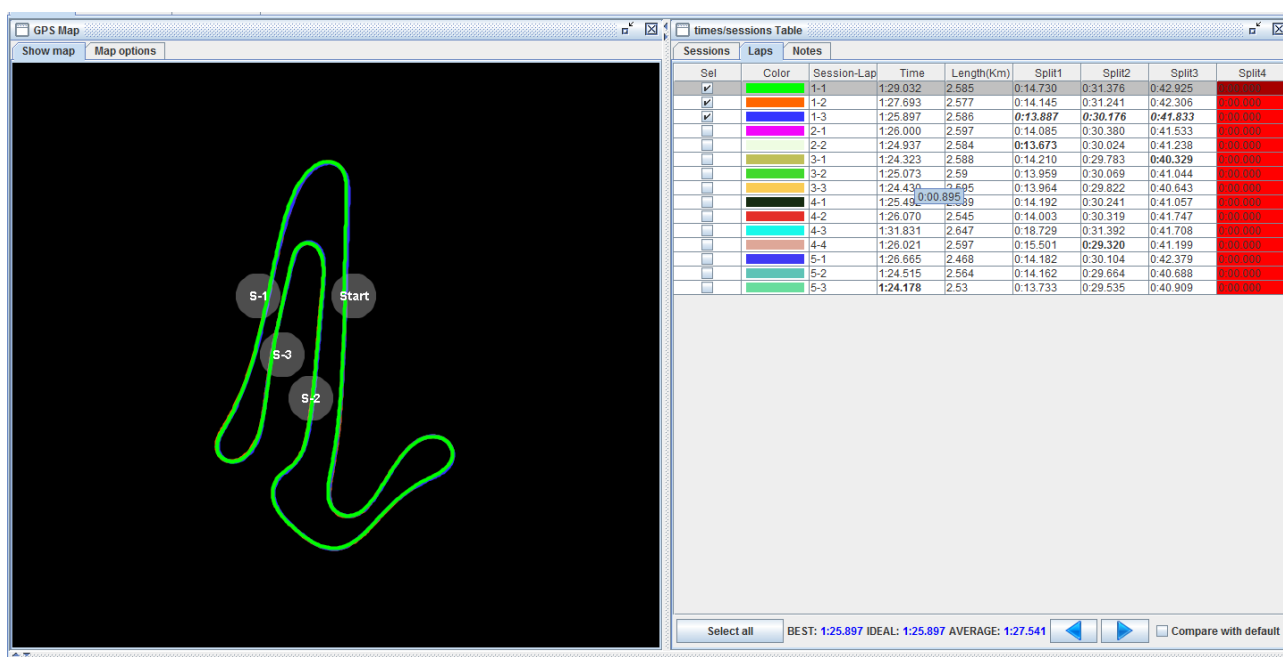


Fig. 11 – Wrongly set split3

- **Remove Split:** You can remove a previously set split, just click it with mouse pointer.
- **Remove all markers:** removes the finish line and all splits from the map.

- **Add/Modify direction:** you can link a direction to each split or to the finish line. When you add a Finish Line or a split you don't set a direction by default, that implies that the split/Finish Line is crossed by a lap whichever direction it crosses its circle. In case of a rough GPS signal or for small tracks it could happen that for instance the finish Line is crossed by lap lines of the counter finish straight. For this reason it is possible to choose a direction to be assigned to each crossing. Set the mouse pointer on the desired crossing, press the right button, the default direction from west to east will appear, drag the arrow to choose the desired direction. The arrow will be hidden at the end of the procedure, pass over with mouse cursor in order to show it again. Whenever you add or modify a direction, all laps and their times will be recalculated

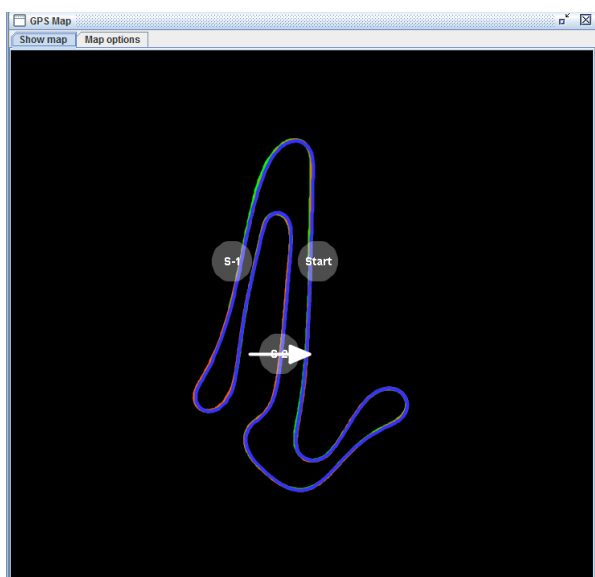


Fig. 12 – default direction for split2

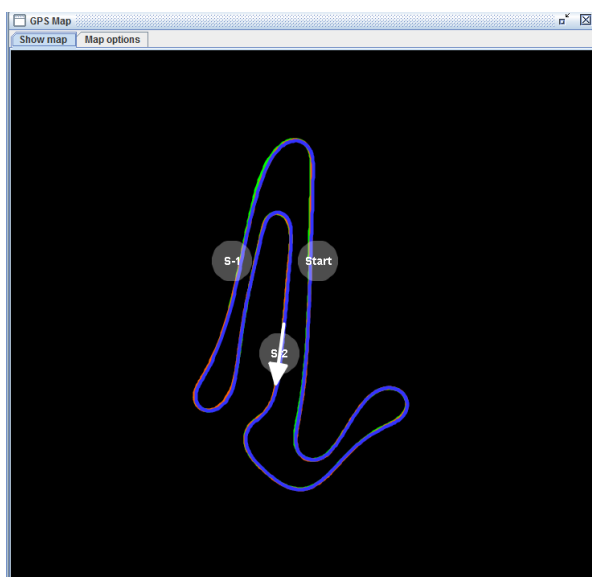


Fig. 13 – desired direction set for split2

All default Danas2 Finish Lines are already set with their correct real direction, when you load them you'll load their coordinates and their directions.

- **Load Finish Line:** you can load a default finish line or a previously saved one. A list will appear and you can choose the desired one. Press Open

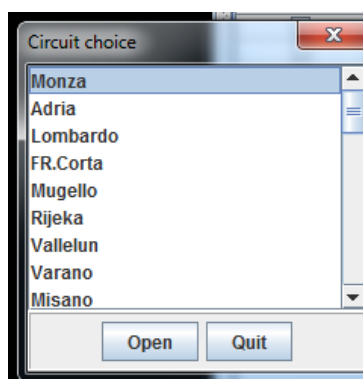


Fig. 14 – Finish Line List

- **Save Finish Line:** you can save Finish Line and Splits currently in use, with their direction too. You only need to name the configuration (max 8 char). Once saved, the track will be available in the list of available circuits. You can also overwrite an already existing one with your preferred settings.
- **List of Finish Lines:** You can manage all the available circuits and their properties. The dedicated window will show the finish line list on the left and on the right all their features: names, coordinates, directions

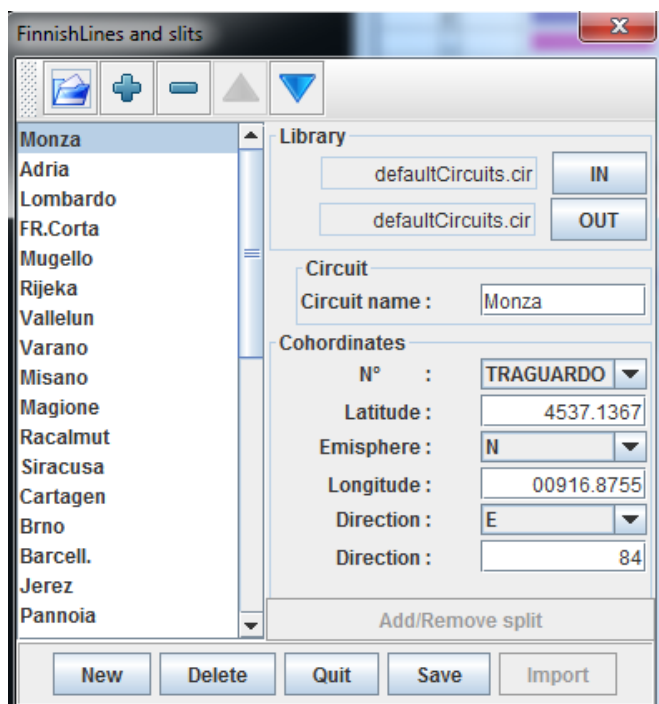


Fig. 15 – Finish Line list

In 'Coordinates' box you can choose the Finish Line or a split and underneath you'll see its properties. With Add/Remove Split you can add/remove a split and then modify its properties. Remember to Save before exiting to let all the modifications / insertions take effectiveness.

With New/Delete (or '+', '-') you can add or remove a whole track while with arrows button you can change their order in the list.

Open and Save are to Load a track list and to save the current one. The same functions are available in Library box where you can set the opened file (IN) and where you are saving the customized list (OUT). You can either modify the default file or create a customized one.

- **Find Finish Line:** With this function you set Danas2 to automatically find a Finish Line when loading new data. If this option is flagged Danas2 will search among the available Finish Lines one close enough to the GPS positions of the loaded data and, if found, will set it. This function is available only when there are no Finish Lines already set.
- **Laps/Sessions:** allow you to switch between Laps or Sessions.

- **Ruler:** you can measure distances on map by this ruler, you just have to click on the first point and drag to the second. A label will appear with the measured distance (in meters).

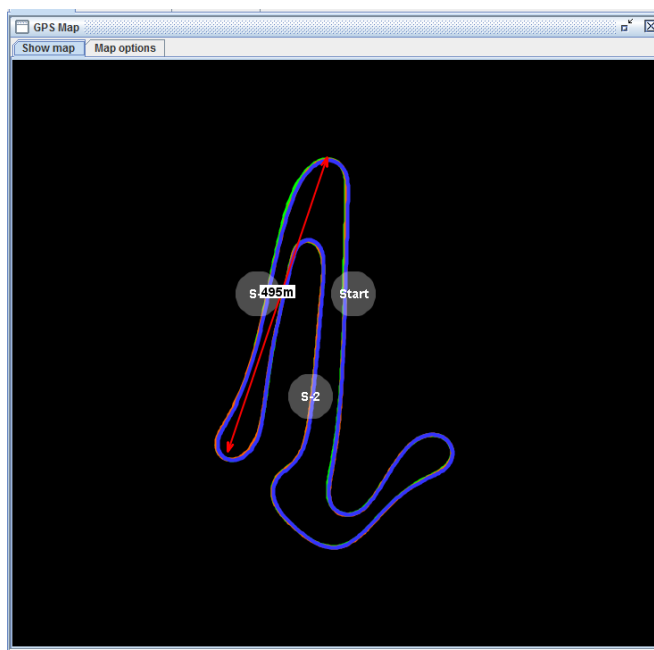


Fig. 16 – Ruler

- **Add cursor:** You can add a cursor on the map. A cursor is a white circle with a black arrow pointing towards the direction of the track in that point. You can move the cursor by scrolling mouse wheel or dragging it.

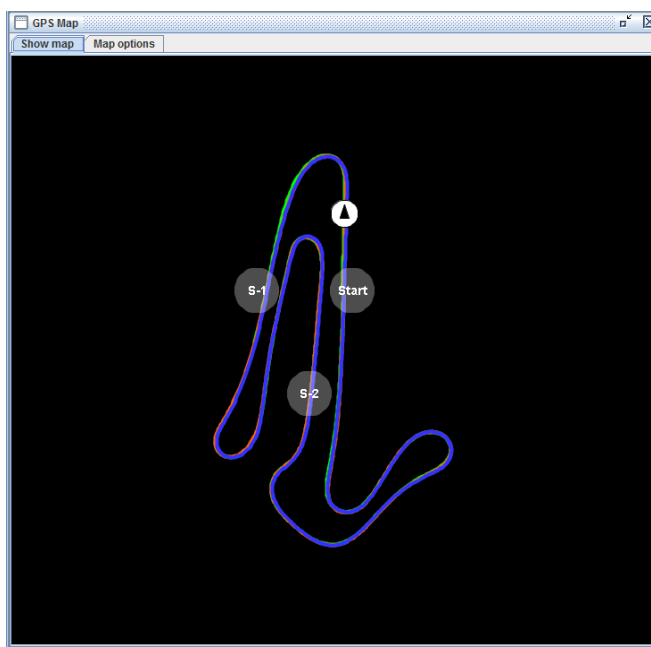


Fig. 17 – Map Cursor

If you activate a cursor on the Graph too, the two of them are synchronized so to show for each graph point the exact position on the map (see further on in this manual).

WARNING: The cursor follows the track / graph of the default session/lap.

- **Map Options:** shows all map options.

GRAPH

The graph purpose is to show all acquired data related to GPS speed, other speeds, RPM, analog and digital channels and all their derivatives.

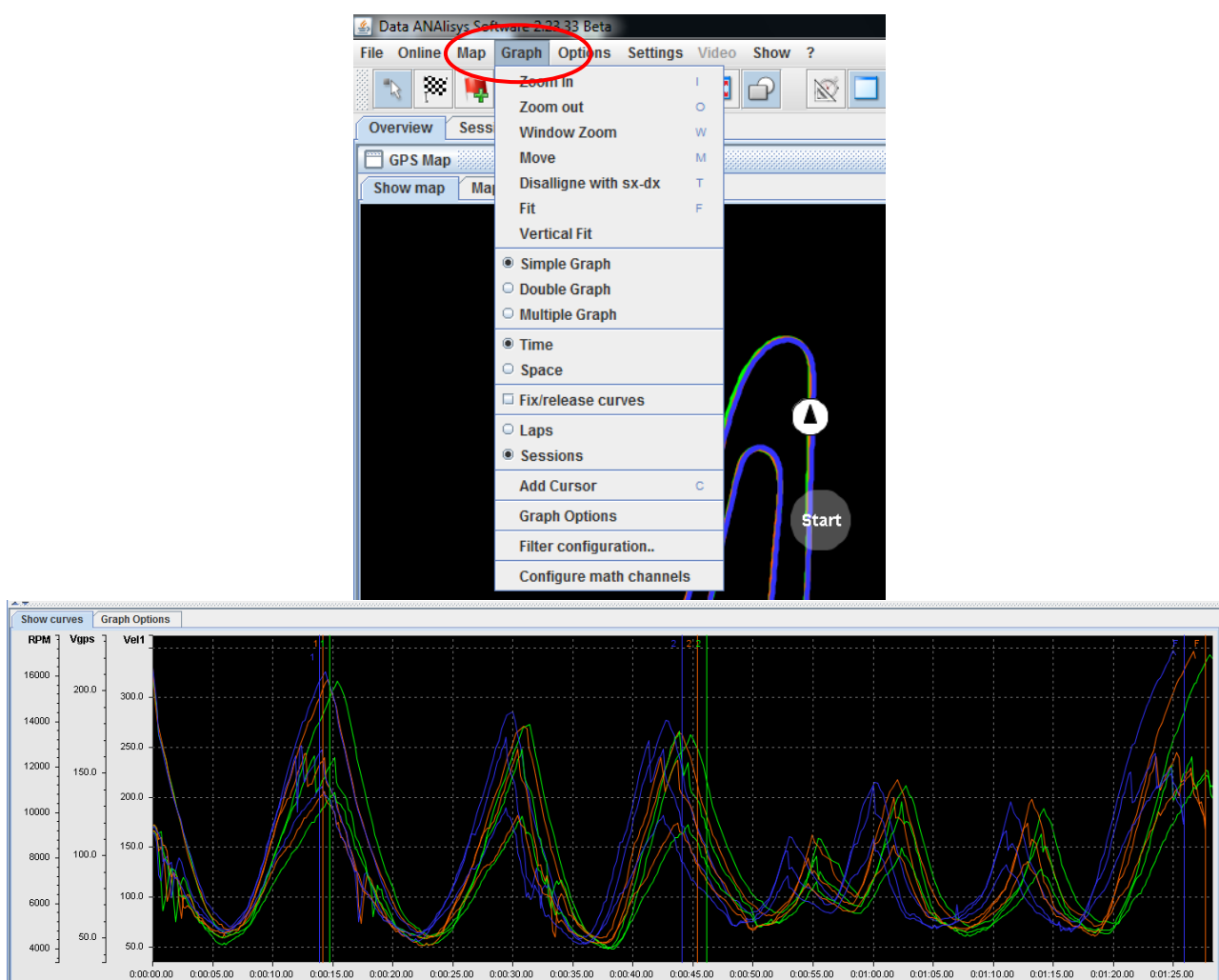


Fig. 18 – Graph Menu and a Graph

Graph window is set in the bottom part of the screen and you cannot move it. It is however possible to extend its window up to fit the whole screen, you just need to drag its boundaries or press the fast buttons on the icon bar.

As previously seen for Map Window, Graph window has two tabs too. The first one is the graph itself [Show Curves], the other contains its main properties [Graph Options].

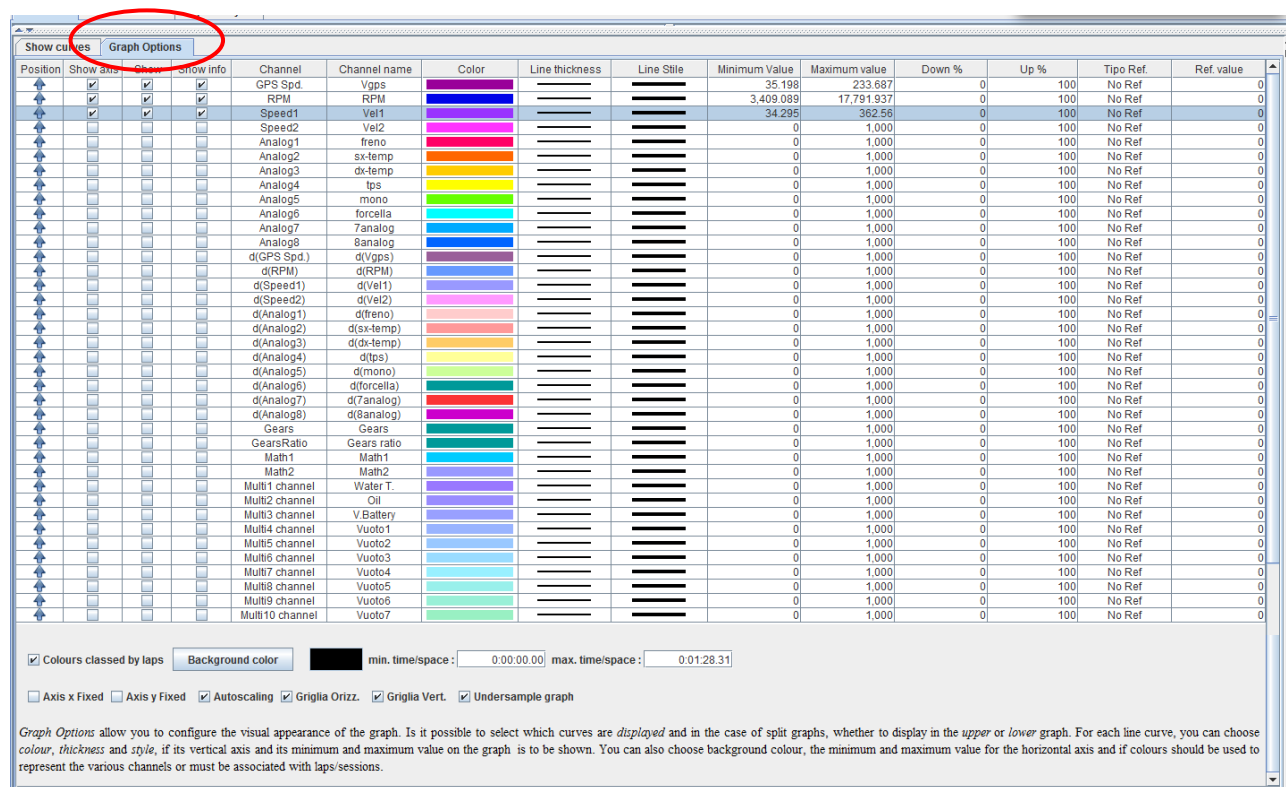


Fig. 19 – Graph Options

In the Graph Options Tab [Fig.19] you find all the available channels (in rows). For each channel you can set:

- **Position:** if the graph is split it says if the channel has to be drawn in the upper or the lower..
- **Show axis:** it specify if the y axis has to be shown for that channel. You can save room in the window avoiding to plot the vertical axis [you can replace it with the use of the 'Info' window (see further on)]. Be aware that you cannot set more than 4 axis anyway.
- **Show:** to draw the channel or not
- **Show Info:** it specify if you want to show the info window, that would display the y axis values for the selected function point. For each newly added channel the default is 'yes'.
- **Channel:** It is the system name for that channel you cannot modify it.
- **Channel Name:** It is the name you can customize for each channel. These names are loaded from the default session settings. If you want to modify these names, you have to modify the settings (see further on).

- **Color:** it is the color for that channel graph. It is disregarded if the flag “Color Classed by Laps” is checked. If you click on the color you can change it.
- **Line thickness:** you can choose three different thicknesses.
- **Line Style:** you can choose 4 different styles.
- **Max/Min Value:** you can set max and min value for the y axis for that channel. These values are automatically set if ‘Autoscaling’ is enabled.
- **Down/Up %:** can be used only with “Simple Graph” mode. It is used to shift graph curves from one another. The effect is similar to the use of a multiple graph but saving room because the axis are not plotted. The value in “Down %” and “Up %” is the percentage of the graph that will be used for the new one. For example if we have a simple graph with RPM and Speed together...

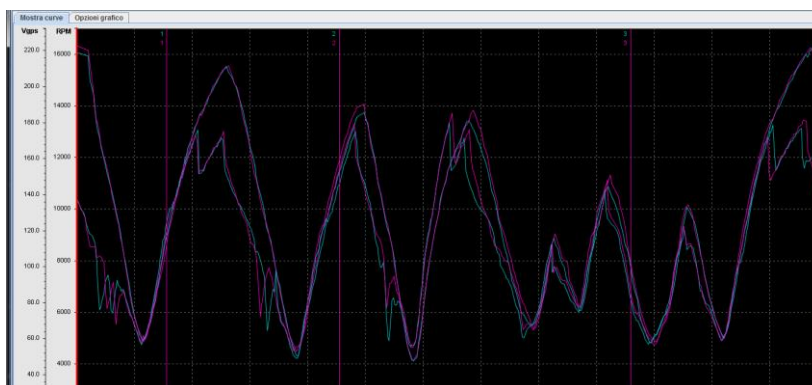




Fig. 20 – Speed and RPM at 100%

...now setting speed between 0% and 50% and RPM between 40% and 100%, the curves will separate as in picture below

Mostra curve												Opzioni grafico			
Posizione	Mostra asse	Visualizza	Mostra info	Canale	Nome canale	Colore	Spessore linea	Stile linea	Valore minimo	Valore massimo	Sotto %	Sopra %	Tipo Ref.	Valore Ref.	
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Vel. GPS	Vgps		1	Solid	31.547	232.56	0	50	No Ref	0	
2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	RPM	RPM		1	Solid	2.988.099	17.009.05	40	100	No Ref	0	
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Velocità1	Vel1		1	Solid	24.836	381.434	0	100	No Ref	0	

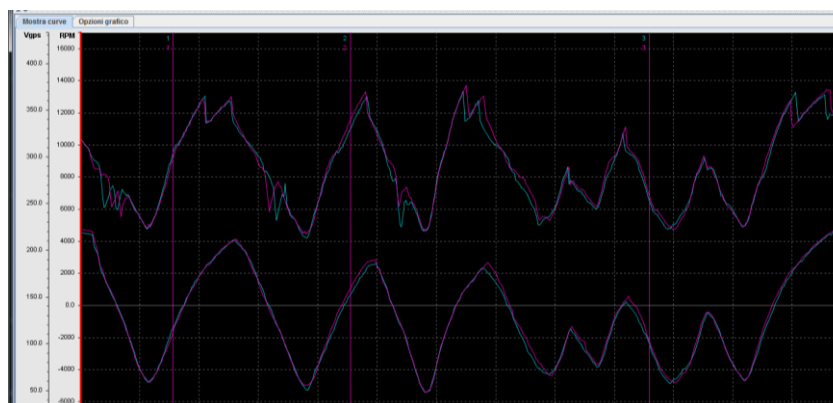


Fig. 20b – Speed at 0 / 50%, RPM at 40% / 100%

- **Ref. Type/Value:** these two columns are to add a reference to the graph that will be plotted as a dotted line (in the same color of the graph they refer to). In column Ref.Type

you can choose “Min”, “Max”, ”Avg” [and in these cases you don’t need to use the Ref.Value column], on the graph a dotted line will appear at the minimum, maximum or average value.

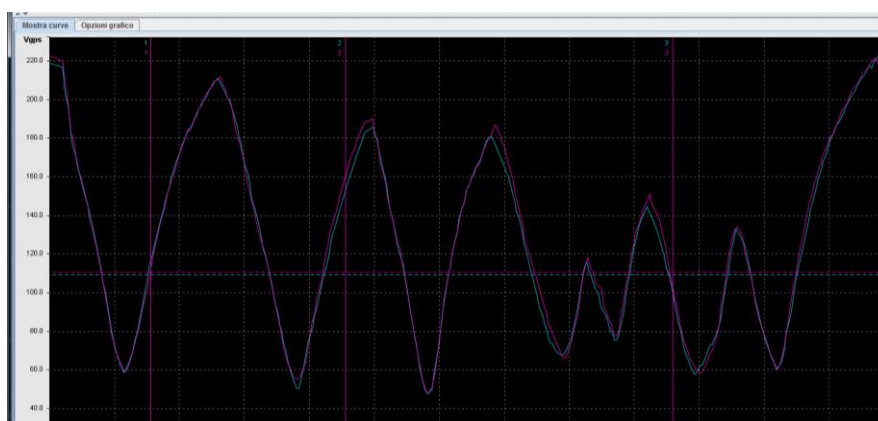


Fig. 20c – Ref.Type AVG

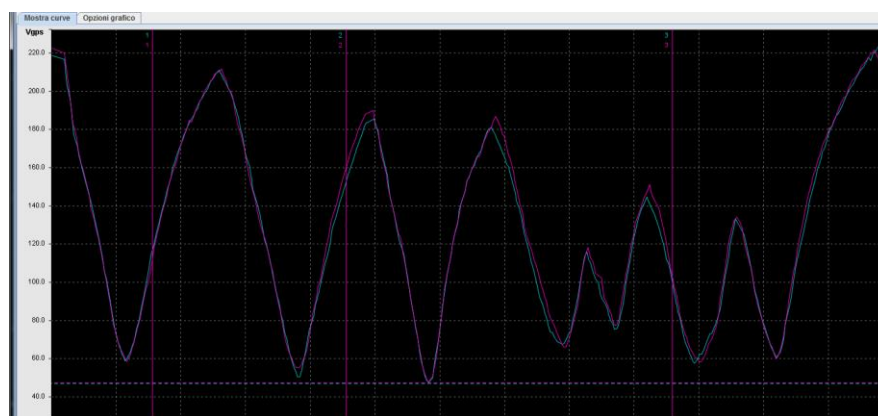


Fig. 20d – Ref.Type MIN

When you choose Ref.Type = “Value” you need to specify the value in Ref.Value column. A dotted line will appear corresponding to the desired value.

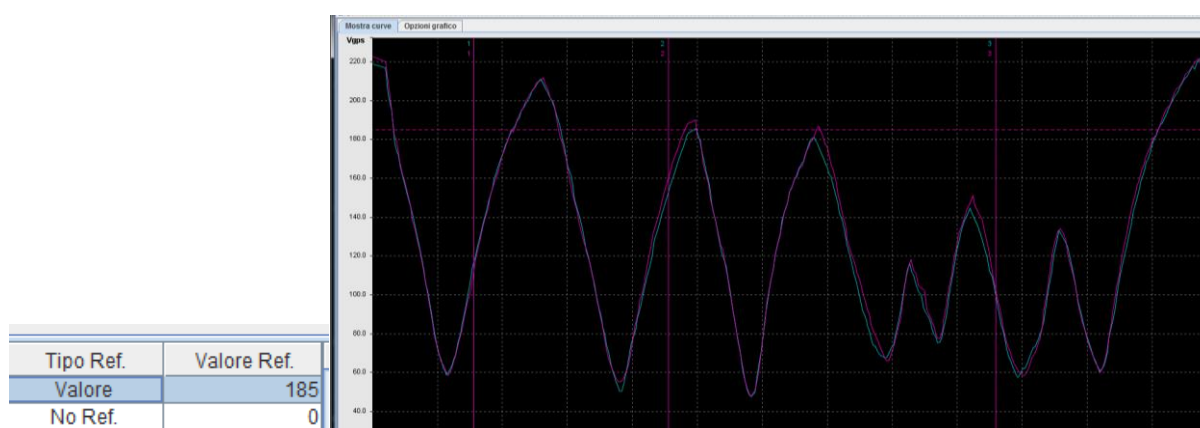


Fig. 20e – Ref.Type = Value = 185

The list of available channels include all analog and digital channels, their derivatives and some 'special' channels. Among these 'Gears Ratio' [that is RPM/Speed1], 'Gears' [see "finding Gears" in Settings chapter], two math channels and 'Multi' Channels. Multi channels are a peculiarity of "Chrome" dashboard. These are 10 distinct channels multiplexed as to obtain a single analog channel. The original channels are for this reason sampled at a frequency that is 1/10 of the sampling frequency (so if you are acquiring at 100Hz multi channels would be acquired at 10Hz). These channels will contain engine temperature, oil sensor, battery voltage and other data that depend on the motorbike make and model as gears from CAN BUS, air temperature, race map and so on.

In the below section of Graph Options you can set:

- **Background Color:** here you can change background color. The current one is represented in the box.
- **Min/max time/distance:** here you can set min and max value for the x axis
- **Color Classed by Laps:** if this is checked each channel will be plotted with the same color of its lap/session and the channel colors settings of above will be disregarded.

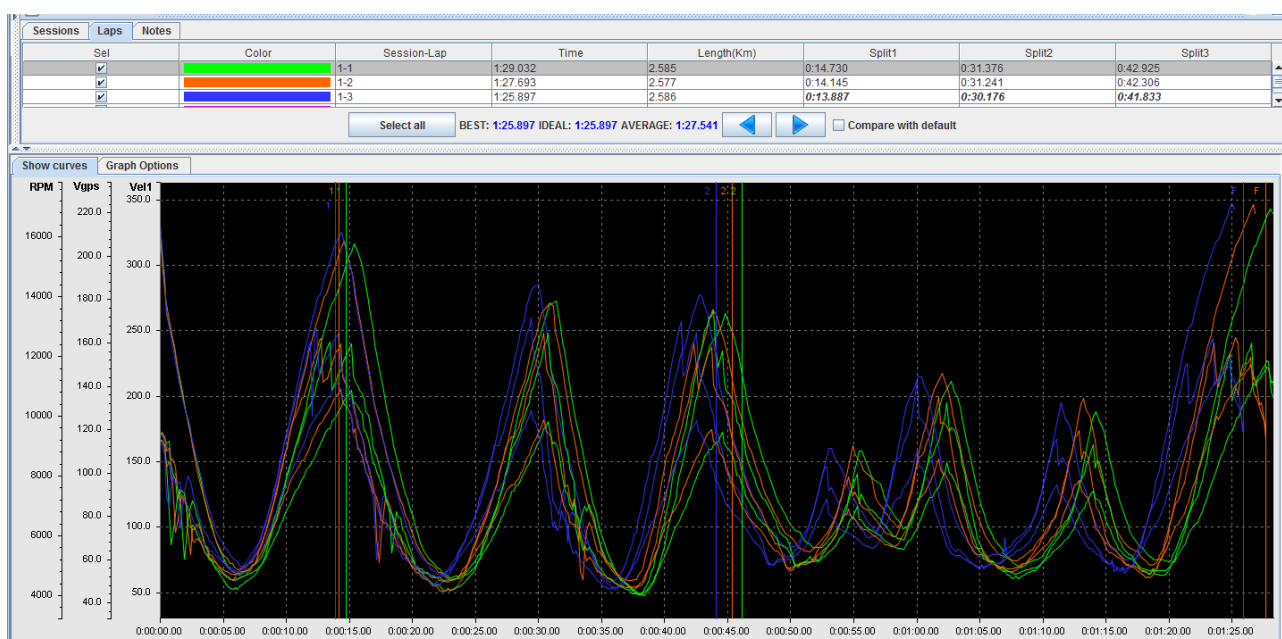


Fig. 20 – Color Classed by Laps

- **x/y-axis fixed:** this function allow you to freeze x or y axis when you either zoom or move. Y-axis freeze can be helpful when you need to move the x axis or zoom in a portion of the graph without altering the vertical plotting. On the other side x-axis freeze helps you zoom y values without altering the position on x scale.
- **Autoscaling:** if you enable this function Danas will automatically set the best values for the y axis for each channel

- **Horizontal/Vertical Grid:** shows or not either grid
- **Under-sample graph:** this it to set up the drawing of the graph. If you have to plot a 2 min lap, 100hz sampling frequency you'll have $(120\text{sec}) \times (100) = 12000$ graph dots. Unfortunately monitor resolutions are lower than so great a number of pixels and many graph dots would be plotted overlapped, thus a heavy calculations but no real gain on graph drawing. If you use this function the system would disregard all the overlapped dots. **WARNING:** being and under sampling this could result in a loss of information, for example for really narrow peaks, use it with caution.

On Graph Menu you can choose:

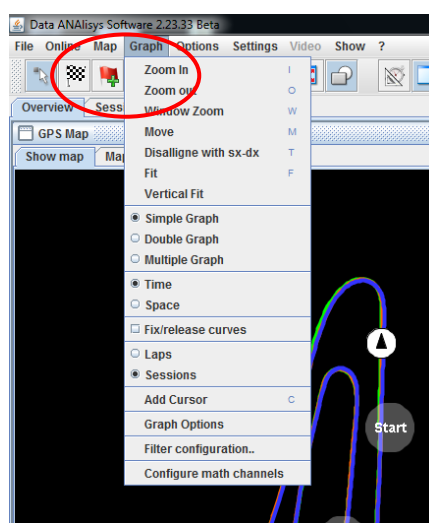


Fig. 21 – Graph Menu

- **Zoom In :** you can zoom in the graph, by clicking in one point the graph will zoom in keeping the selected point as its center.
- **Zoom Out:** you can zoom out the graph, by clicking in one point the graph will zoom out keeping the selected point as its center.
- **Zoom Window:** you can select a rectangle on the graph, the selected portion will be zoomed so to fit the available window size.
- **Move:** you can move the graph by simply clicking and dragging. You can also zoom in or zoom out scrolling mouse wheel.
- **Fit:** this function will fit all the current graphs.
- **Vertical Fit:** it will best fit y-axis for the plotted channels.
- **Simple/Double/Multiple Graph:** here you can choose graph appearance. Simple: all graphs will be plotted in the same window. Double: the main window will be split in two of the same size and you can choose to plot each channel in the upper or in the lower one. Multiple: Each channel graph will have its own window.

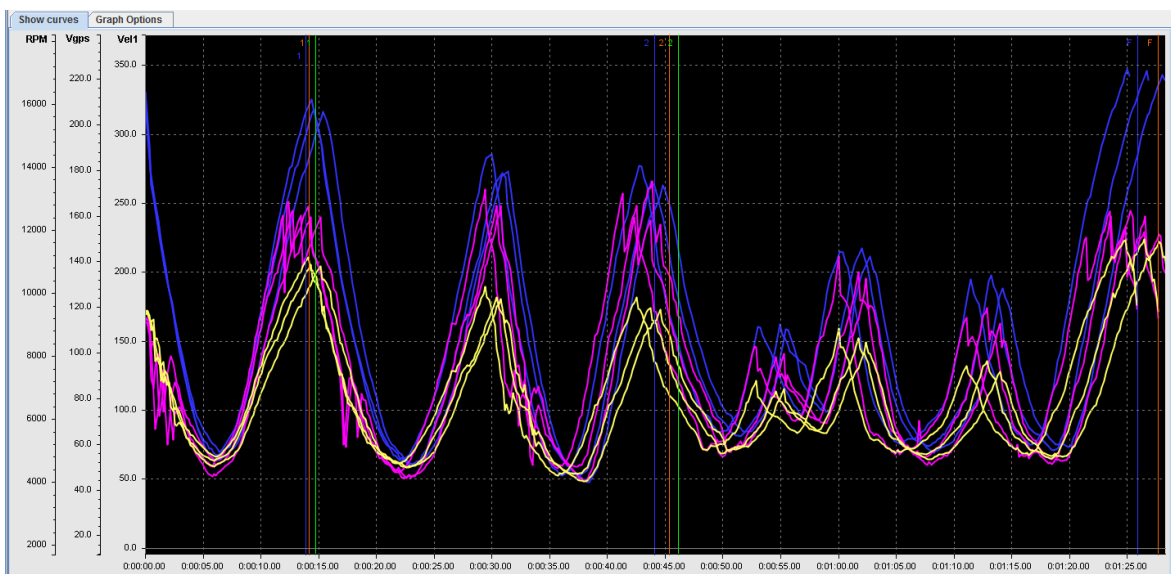


Fig. 22 - Simple

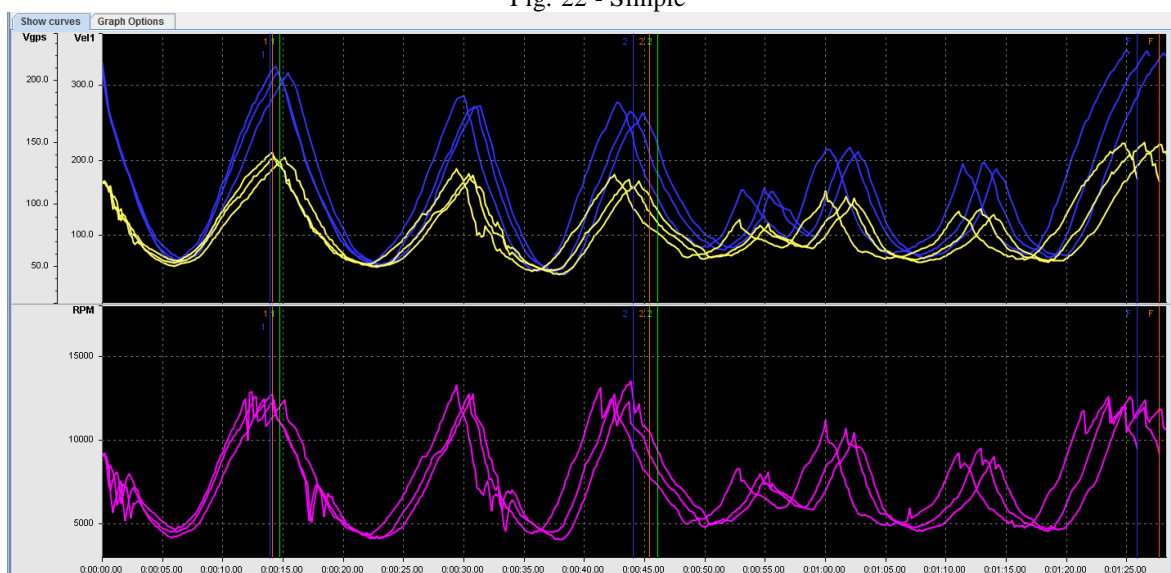


Fig. 23 - Double

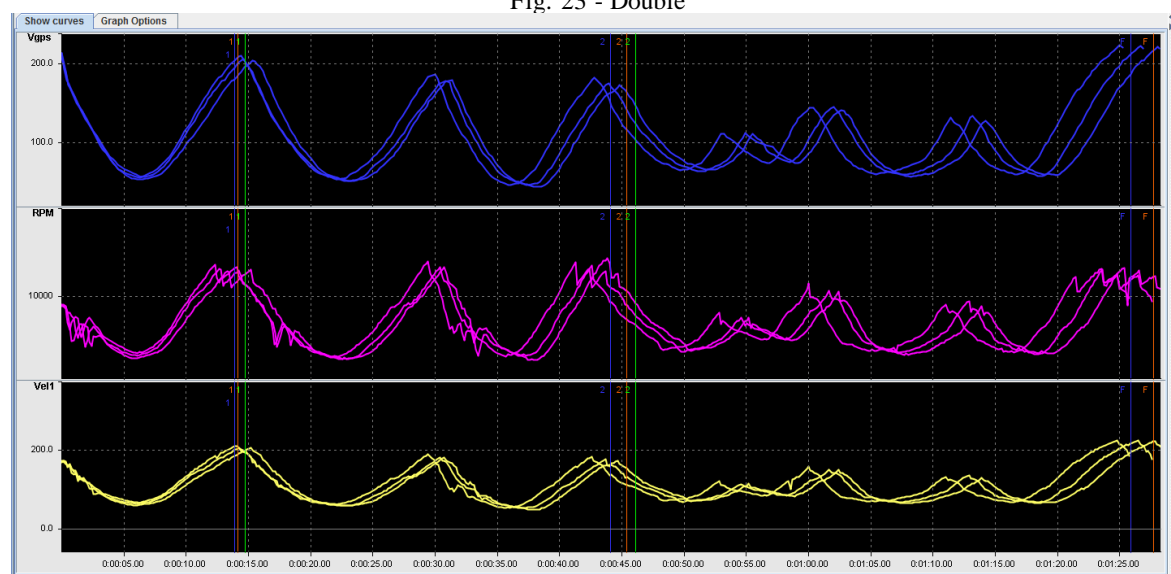


Fig. 24 - Multiple

- **Distance/Time:** you can set the x axis either in time [sec] or in distance [meters]

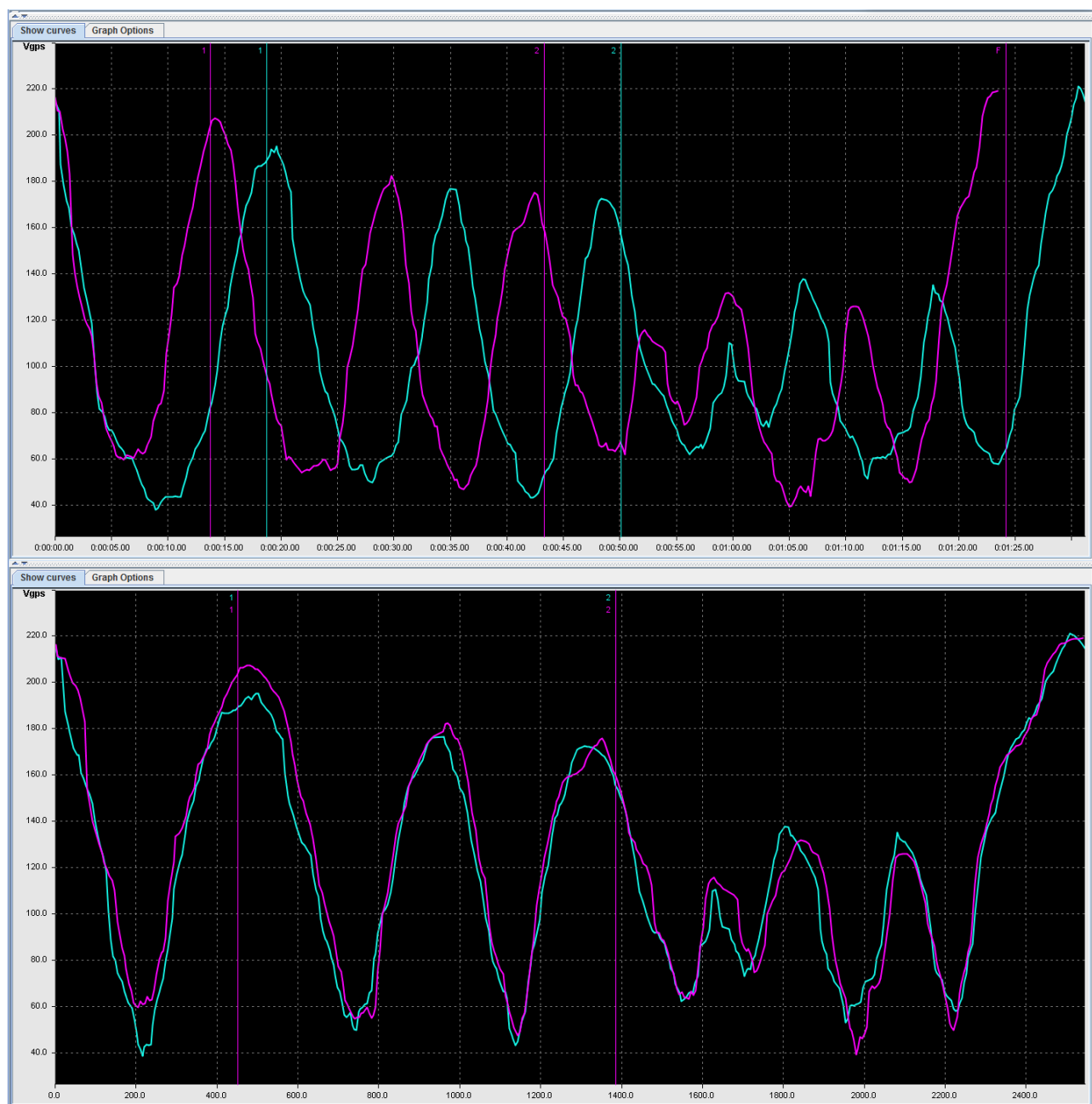


Fig. 25 - Same graph but x axis in time or in distance

WARNINGS: in distance mode, distance is calculated with reference to the Default Session/Lap. If you plot all laps, these are shortened/stretched as to be of the same length of default one. This plot is more accurate the more split you add (the fitting procedure is performed split by split)

- **Fix/Release curves:** you can move horizontally one graph path to the respect of the others. It can be helpful, in Lap and Time mode, so you can align the paths on any desired point not only on the Finish Line, for example you can compare two distinct laps aligning them on a specific corner. When you activate this function the reference is again the Default Lap that is always plotted, then you can choose which laps are to be moved. Activate the function from this menu or by the fast icon on the bar. Once activated the default lap will be activated, then you can select the laps to be moved (deselecting them the offset would come back to zero). Once selected (even more than one) you can choose which laps to move clicking on their names. The line will have a green background and can be translated.

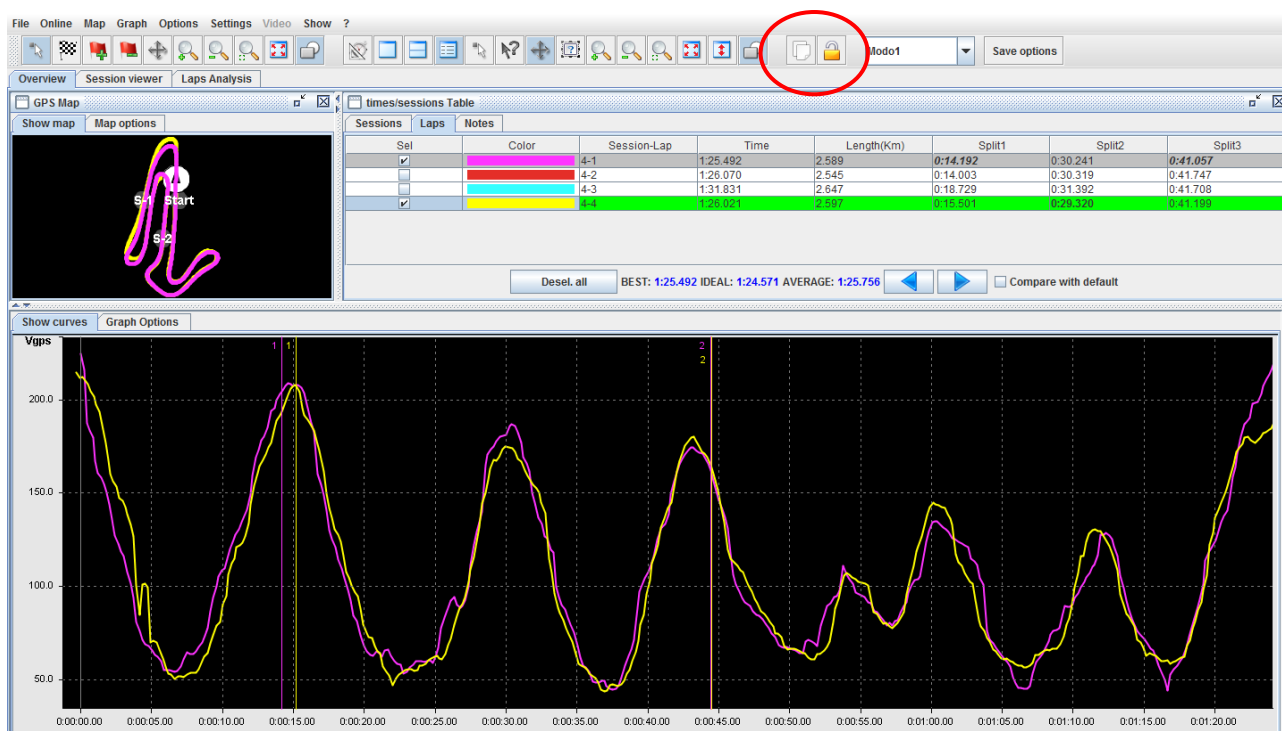


Fig. 26 –Fix/Release Graphs

To move green selected laps you can use two ways:

- 1) By the “Move” mode, or using the icon with the lock, you can translate graphs dragging them with right mouse button
- 2) By “disalign with sx-dx”, or using the icon with paper sheets, you can translate curves clicking the starting point with left button and the end point with right mouse button.



Fig. 27 –Icons for ‘move’ and ‘disalign’ graphs

- **Laps/Sessions:** allow you to switch between Laps or Sessions.

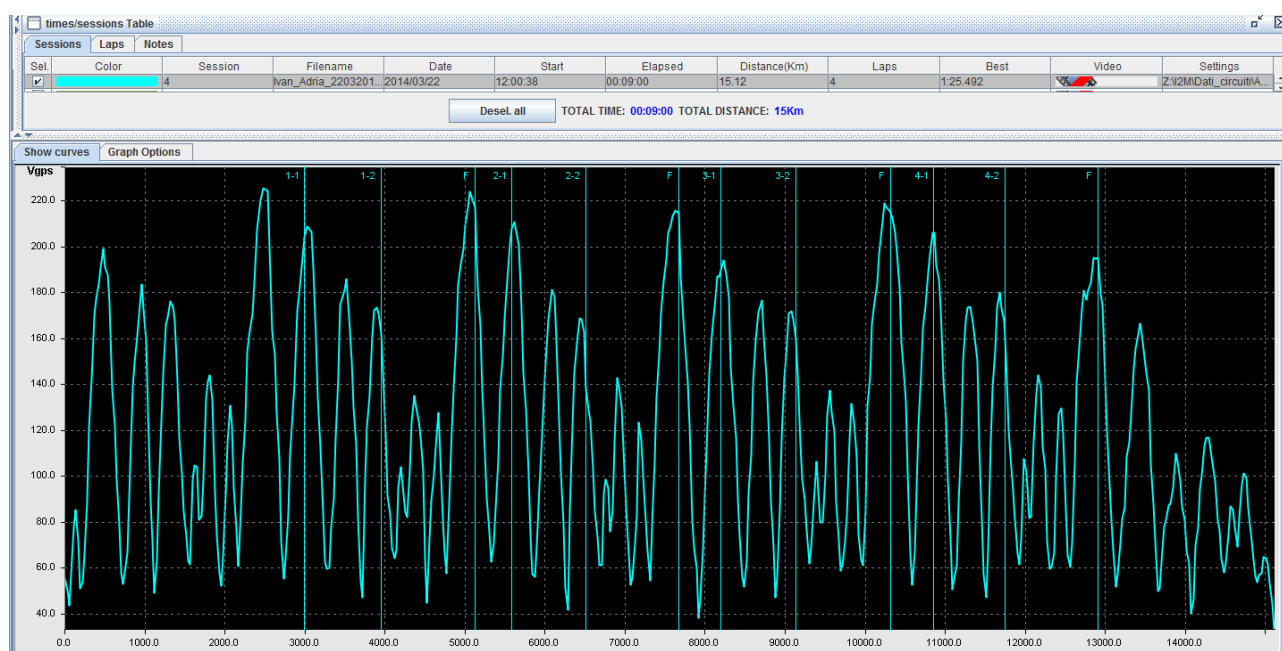


Fig. 28 – Sessions

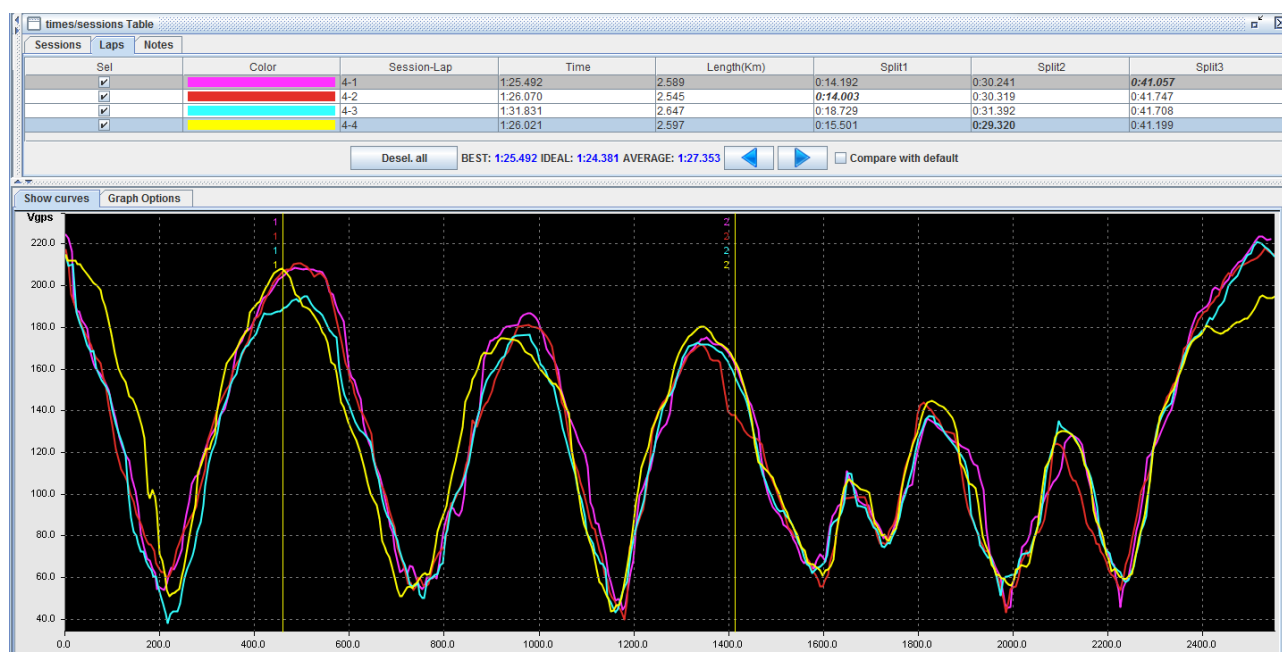


Fig. 29 - Laps

- **Add cursor:** you can add a cursor on the graph paths, it is symbolized by a vertical red line, you can drag and drop it wherever you like. This graph cursor is synchronized with map cursor and with the video (if present) so you can follow exactly graph position and map position. Keep in mind that cursor position is always related to default Session/Lap.

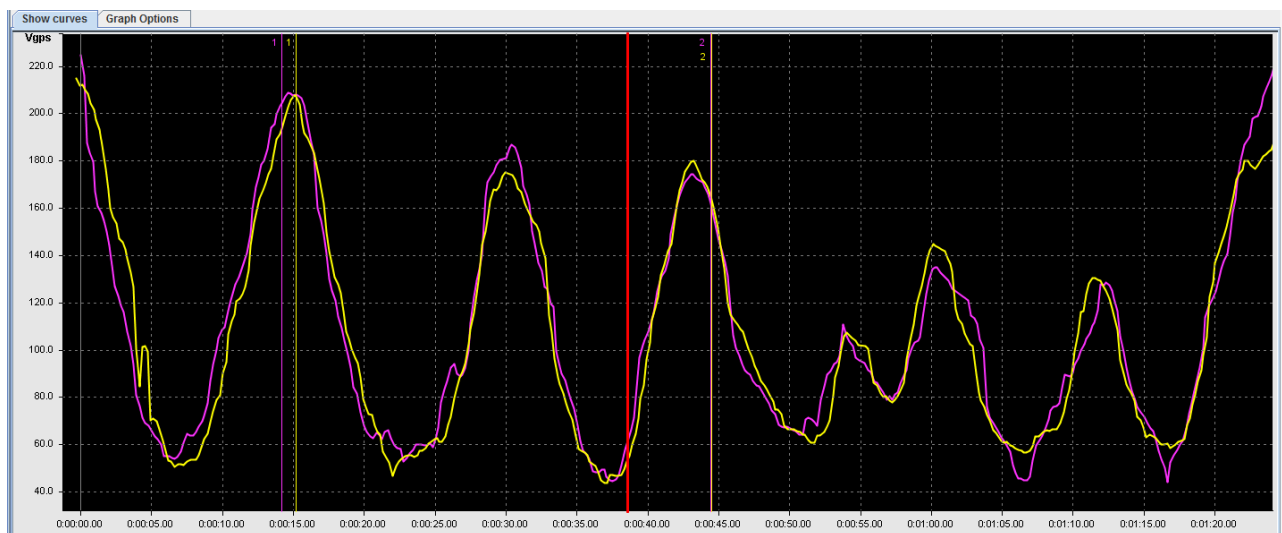



Fig. 30 – Graph Cursor

- **Second cursor:** you can add a second cursor (only from the icon ). The second cursor will appear as a vertical green line. Even this cursor can be dragged wherever you want. It is really useful if used together “info” window where you find for selected channels all the values and the gaps between them.

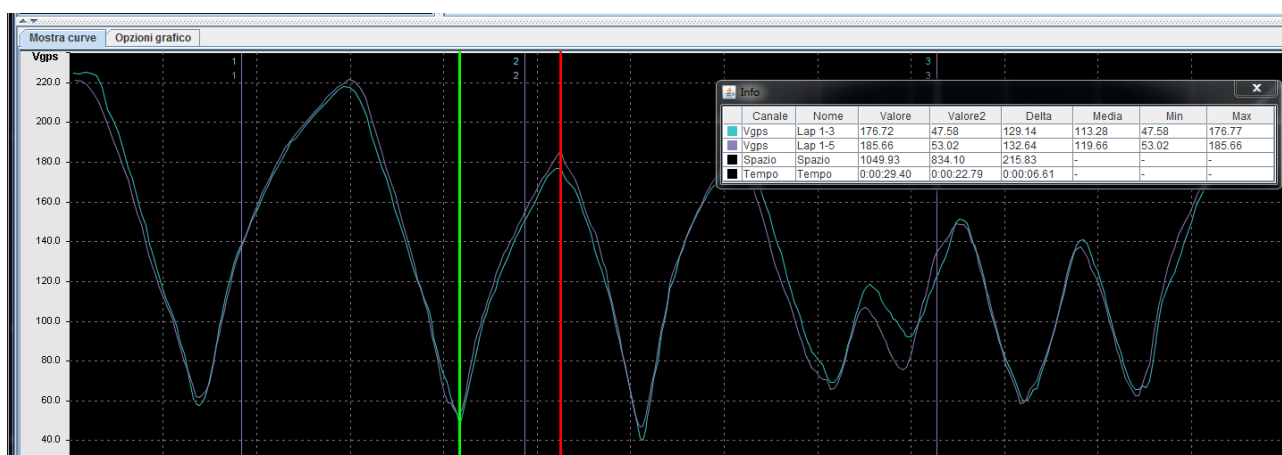


Fig. 30b – Second Graph Cursor

- **Graph Options:** will show the dedicated Tab
- **Filters Setup:** this window is for filters setup For each channel (with the exception of multi channels) you can choose the frequency for a low pass filter. With ‘Apply’ button the filters are applied while with ‘Reset’ all filters are removed.

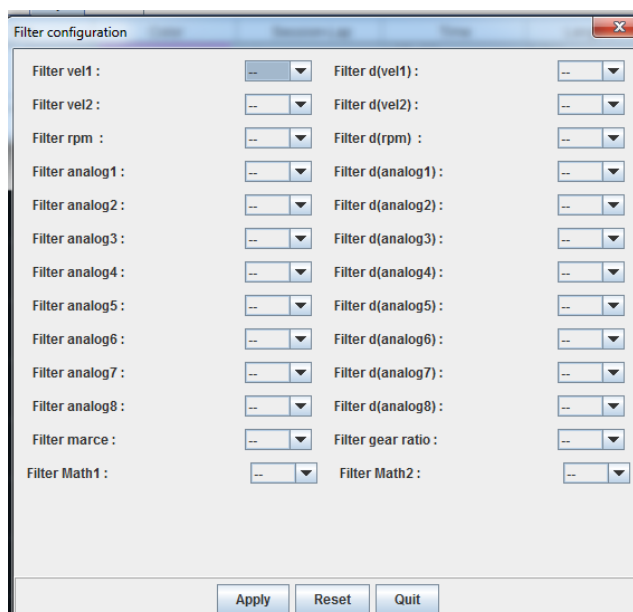


Fig. 31 – Filters

- **Math Channels Setup:** with this window you can setup two mathematical channels. You can choose all the others channels as operands and use the available functions. Be careful with the use of the “IF” function. Its syntax is: *IF (condition, then, else)* and its meaning is: the value of this function will be ‘then’ if the condition is true, while otherwise it will be ‘else’. For example if we have *IF(RPM>5000,100,0)* this means that the function value will be 100 anytime RPM is greater than 5000, 0 elsewhere. All functions can be saved and reloaded and they can be named for a rapid reference in the info window or along the x axis.

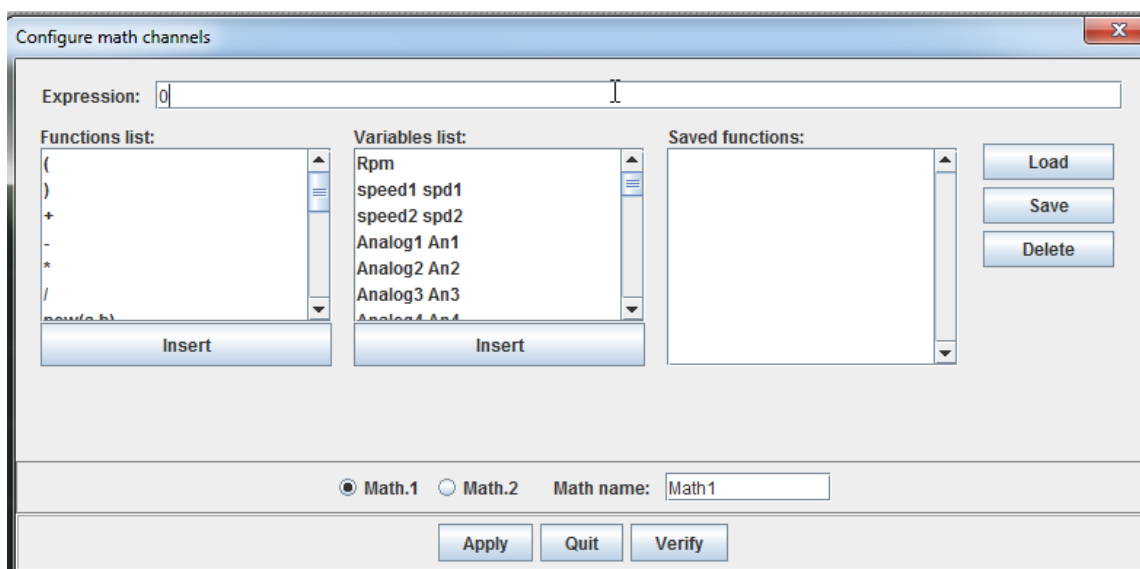


Fig. 32 – Math Channels

You can access graph functions by the icon bar too [some of them only from the icons]. Here you can find also Graph Mode selector.

- **Graph Mode Selector:** By this drop-down menu you can choose among the 10 available modes. When you 'Save Options' you are saving all the customization of the current graph (distance or time axis, number of active windows...) This way you are creating your personal configuration to be used whenever you like. You can name each mode as you like.



Fig. 33b – Graph Mode Selector

- **Max and Min:** this is another function you can activate only from the corresponding icon [?]. By this icon you can highlight max and min values, translucent dots will appear corresponding to max and min values on the graph.

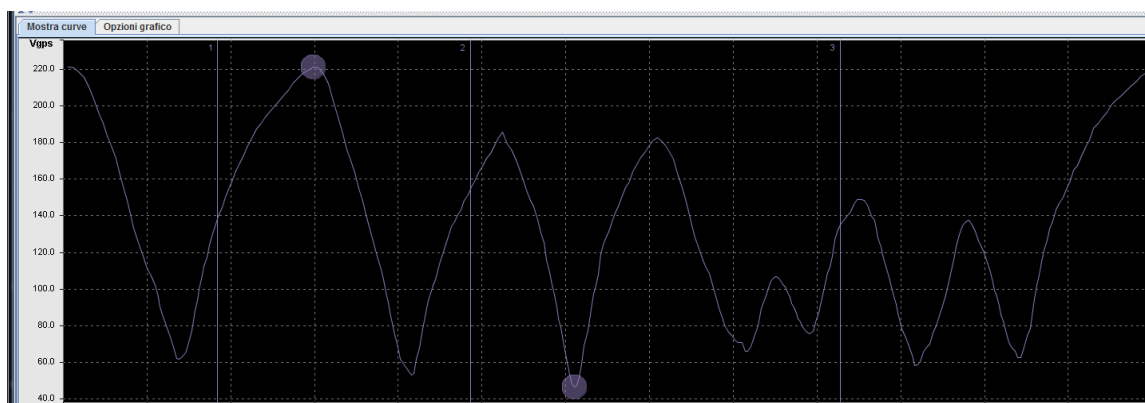


Fig. 34c – Massimi e minimi

Here is a summary of all the icons on graph bar:



Fig. 35 – Graph Icon Bar: time/distance, simple/double/multiple graph, first cursor, second cursor, move, max/min, zoom in, zoom out, zoom window, fit, vertical fit, laps/sessions, fix/release, graph mode selector

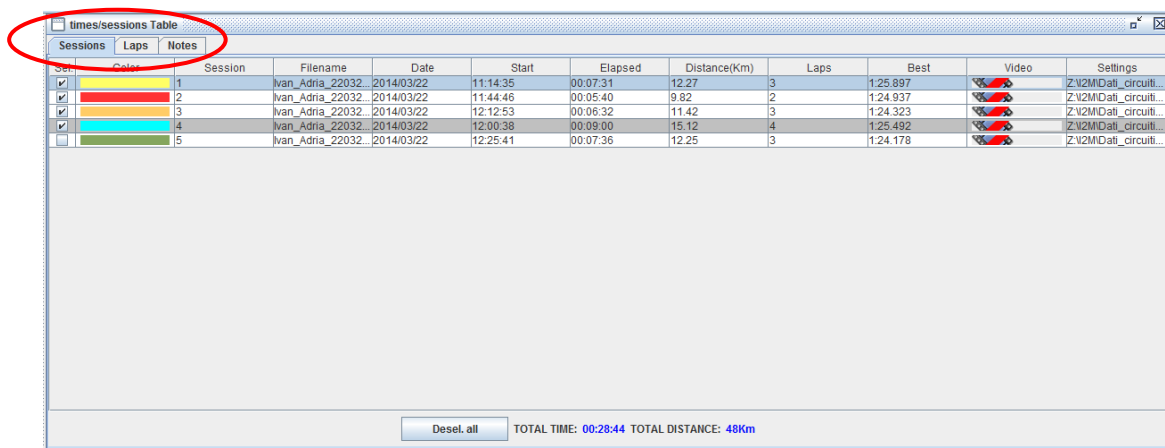
THE TABLE

Table window is for the summary of loaded sessions and laps and to select what is to be drawn and to edit the preferences. Its default position is in the upper right corner.

It is composed by 3 tabs: Sessions, Laps and Notes.

'Sessions' Tab.

'Sessions Tab' summarizes all data of all sessions: in each line you have the flag for selection, its color, its progressive number, its file name, date, start time, elapsed time, distance, number of laps (if there is a Finish Line), best time, video, Settings file.



Session	Filename	Date	Start	Elapsed	Distance(Km)	Laps	Best	Video	Settings
1	Ivan_Adria_22032_2	2014/03/22	11:14:35	00:07:31	12.27	3	1:25.897		Z:\V2M\Dat_..._circuit...
2	Ivan_Adria_22032_2	2014/03/22	11:44:46	00:05:40	9.82	2	1:24.937		Z:\V2M\Dat_..._circuit...
3	Ivan_Adria_22032_2	2014/03/22	12:12:53	00:06:32	11.42	3	1:24.323		Z:\V2M\Dat_..._circuit...
4	Ivan_Adria_22032_2	2014/03/22	12:00:38	00:09:00	15.12	4	1:25.492		Z:\V2M\Dat_..._circuit...
5	Ivan_Adria_22032_2	2014/03/22	12:25:41	00:07:36	12.25	3	1:24.178		Z:\V2M\Dat_..._circuit...

Desel. all TOTAL TIME: 00:28:44 TOTAL DISTANCE: 48Km

Fig. 36 – Table Sessions Tab

You can easily change color, video or settings file.



Fig. 37 – color choice

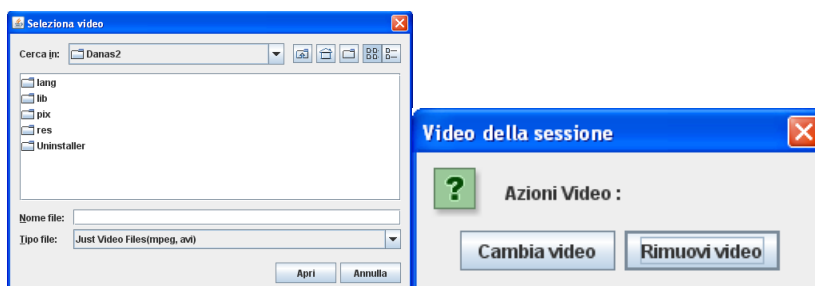


Fig. 38 – Select, remove video

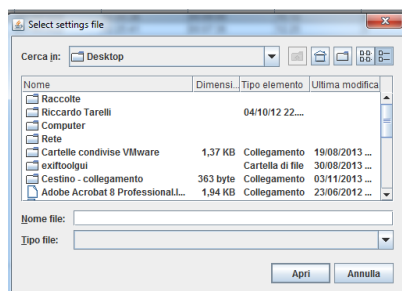
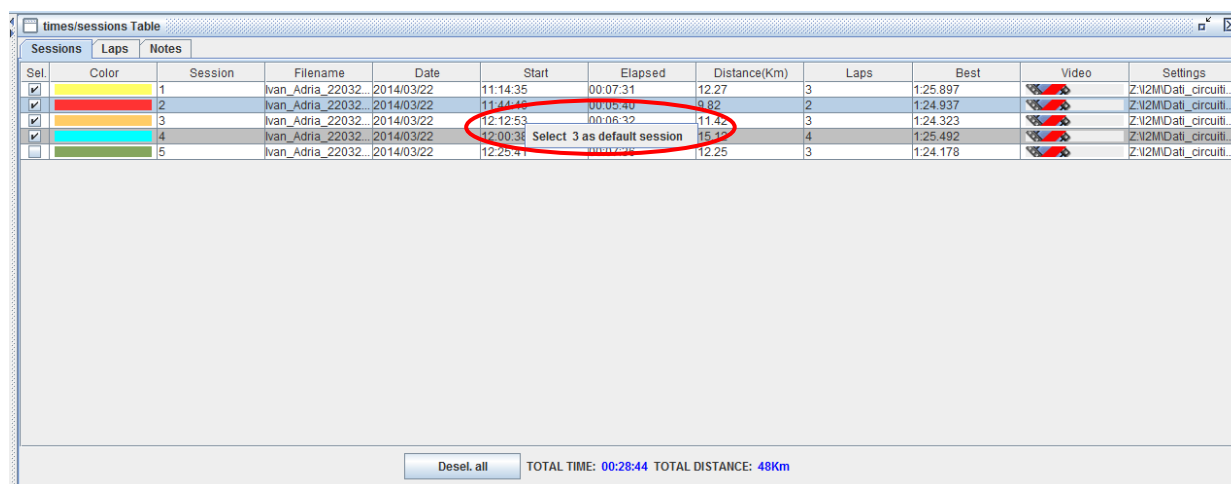


Fig. 39 – Change settings file

If you find 'default' in settings cell it means the default file setting is being used.
A red barred film icon means that no video has been selected for that session.

WARNINGS:

With the right mouse button you can set the default session. Once selected the default session will have a gray background.

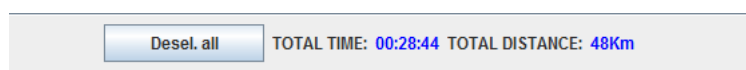


Sel.	Color	Session	Filename	Date	Start	Elapsed	Distance(Km)	Laps	Best	Video	Settings
<input checked="" type="checkbox"/>	Yellow	1	Ivan_Adria_22032	2014/03/22	11:14:35	00:07:31	12.27	3	1:25.897		Z:\I2MData\circult...
<input checked="" type="checkbox"/>	Red	2	Ivan_Adria_22032	2014/03/22	11:14:46	00:05:40	0.92	2	1:24.937		Z:\I2MData\circult...
<input checked="" type="checkbox"/>	Blue	3	Ivan_Adria_22032	2014/03/22	12:12:53	00:06:32	11.4	3	1:24.323		Z:\I2MData\circult...
<input checked="" type="checkbox"/>	Cyan	4	Ivan_Adria_22032	2014/03/22	12:00:38	00:02:35	15.12	4	1:25.492		Z:\I2MData\circult...
<input type="checkbox"/>	Green	5	Ivan_Adria_22032	2014/03/22	12:25:41	00:02:35	12.25	3	1:24.178		Z:\I2MData\circult...

Desel. all TOTAL TIME: 00:28:44 TOTAL DISTANCE: 48Km

Fig. 40 – Default Session

At the bottom of the window you'll find the elapsed time and distance and select/deselect all button.

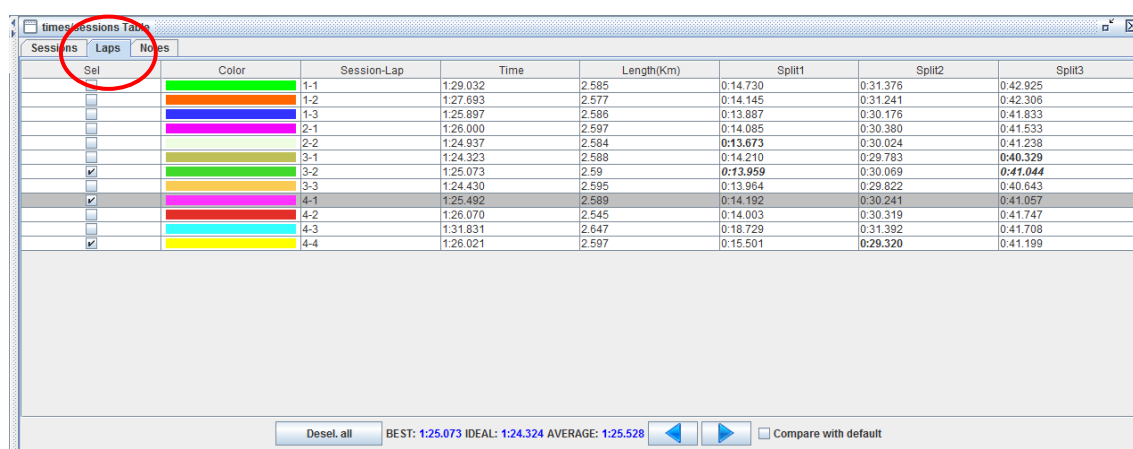


Desel. all	TOTAL TIME: 00:28:44 TOTAL DISTANCE: 48Km
------------	---

Fig. 41 – the bottom line

'Laps' Tab

This is the summary of all laps of the selected sessions.



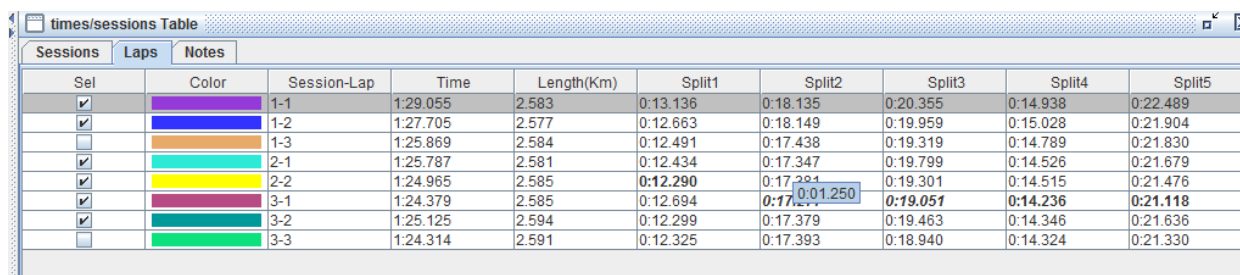
Sel.	Color	Session-Lap	Time	Length(Km)	Split1	Split2	Split3
<input type="checkbox"/>	Yellow	1-1	1:29.032	2.585	0:14.730	0:31.376	0:42.925
<input type="checkbox"/>	Red	1-2	1:27.693	2.577	0:14.145	0:31.241	0:42.306
<input type="checkbox"/>	Blue	1-3	1:25.897	2.586	0:13.887	0:30.176	0:41.833
<input type="checkbox"/>	Cyan	2-1	1:26.000	2.597	0:14.085	0:30.380	0:41.533
<input type="checkbox"/>	Green	2-2	1:24.937	2.584	0:13.673	0:30.024	0:41.238
<input type="checkbox"/>	Yellow	3-1	1:24.323	2.588	0:14.210	0:29.783	0:40.329
<input type="checkbox"/>	Red	3-2	1:25.073	2.59	0:13.959	0:30.069	0:41.044
<input type="checkbox"/>	Blue	3-3	1:24.430	2.595	0:13.964	0:29.822	0:40.643
<input checked="" type="checkbox"/>	Cyan	4-1	1:25.492	2.589	0:14.192	0:30.241	0:41.057
<input type="checkbox"/>	Green	4-2	1:26.070	2.545	0:14.003	0:30.319	0:41.747
<input type="checkbox"/>	Yellow	4-3	1:31.831	2.647	0:18.729	0:31.392	0:41.708
<input checked="" type="checkbox"/>	Red	4-4	1:26.021	2.597	0:15.501	0:29.320	0:41.199

Desel. all BEST: 1:25.073 IDEAL: 1:24.324 AVERAGE: 1:25.528 ☐ Compare with default

Fig. 42 – Laps Tab

It has many columns: the flag to select/deselect each lap, its color, its number in the session (for example 4-1 means first lap of the fourth session), its time, in bold the best time, length [in km] (it can be significantly different due to the trajectory). All the remaining columns are splits, which are present only if set on the map (keep in mind that wrong split will have red background).

If you pass the mouse cursor over each cell that contains a time (whether a total or a split) a window will appear with the gap between the best time. In **bold** you have the best split while in *italic bold* the best split of the selected laps.



Sel	Color	Session-Lap	Time	Length(Km)	Split1	Split2	Split3	Split4	Split5
<input checked="" type="checkbox"/>	Blue	1-1	1:29.055	2.583	0:13.136	0:18.135	0:20.355	0:14.938	0:22.489
<input checked="" type="checkbox"/>	Orange	1-2	1:27.705	2.577	0:12.663	0:18.149	0:19.959	0:15.028	0:21.904
<input checked="" type="checkbox"/>	Green	1-3	1:25.869	2.584	0:12.491	0:17.438	0:19.319	0:14.789	0:21.830
<input checked="" type="checkbox"/>	Red	2-1	1:25.787	2.581	0:12.434	0:17.347	0:19.799	0:14.526	0:21.679
<input checked="" type="checkbox"/>	Yellow	2-2	1:24.965	2.585	0:12.290	0:17.281	0:19.301	0:14.515	0:21.476
<input checked="" type="checkbox"/>	Purple	3-1	1:24.379	2.585	0:12.694	0:17.250	0:19.051	0:14.236	0:21.118
<input checked="" type="checkbox"/>	Teal	3-2	1:25.125	2.594	0:12.299	0:17.379	0:19.463	0:14.346	0:21.636
<input type="checkbox"/>	Light Blue	3-3	1:24.314	2.591	0:12.325	0:17.393	0:18.940	0:14.324	0:21.330

Fig. 43 – Gap with best, best split. Default Lap with gray background.

You can order the laps row by clicking on their headers. An arrow will appear next to the ordering header, either ascending or descending.

At the bottom of the window you'll find a select/deselect all button. You have the Best Time (**Best**) and the average time (**Average**) and the Ideal Time (**Ideal**) composed by best splits. All these data are referred only to selected laps.

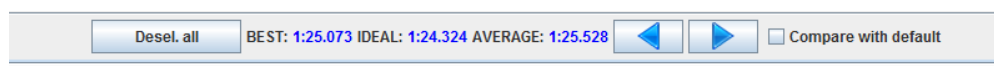


Fig. 44- Bottom Line

Two big arrows on the bottom line are to scroll Laps. If you flag 'Compare with default' you can scroll all Laps but default Laps will be the reference.

IMPORTANT:

Right clicking you can set a Lap as the default Lap. Once default, the lap will have a gray background.

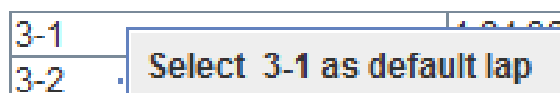


Fig. 45 - Default Lap

'Note' Tab

In the Note Tab you can add your personal notes to each session. These notes will be save together with all recorded data and will be available at next reload.

WARNING: this feature is available only with Danas2.x. Loading data with the older version would remove all customized settings.

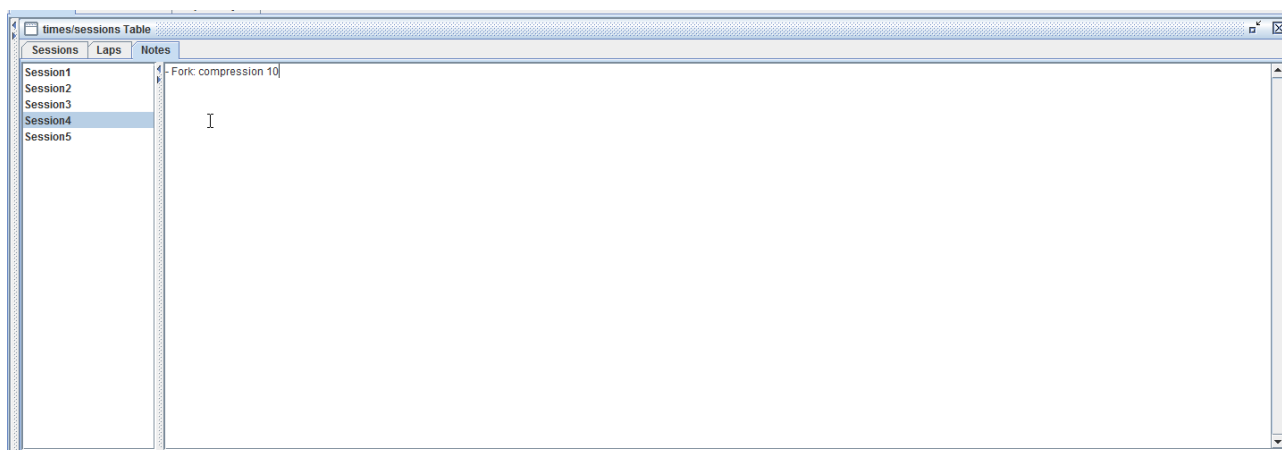


Fig. 46 – Note Tab

VIDEO

Video Window allows you to load synchronized videos. Opening the Video window the video of the default session/Lap will be automatically loaded. Switching between Laps and Sessions the video will switch accordingly. Video window is managed by the Video Menu.

GRAPH VALUES (INFO AND SELECTED INFO)

You can access this window by Show Menu → Show Info and Selected Info. In these windows you have all graph values for the cursor point.

You can place “Info” Window next to the Graph or in a floating window. In Info Window you can see the values for each channel selected in the “Show Info” column of graph Options. Values are sorted by columns so to be easily compared.

“Selected Info” Window otherwise can be only a floating window and will show only visible channels. In order to fully exploit “Selected Info” window potentiality, you need to use Graph Cursors. You’ll have values of selected channels related to Cursor1 and Cursor2 and their gap, max value and min value and the average between the two.

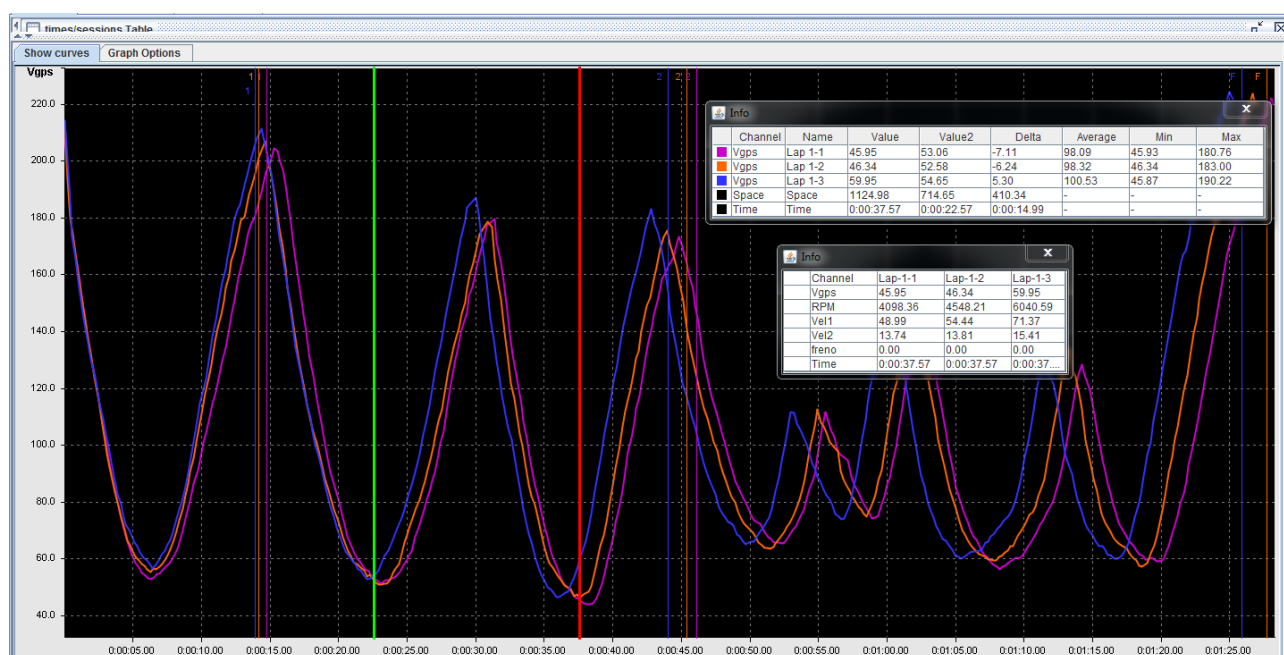
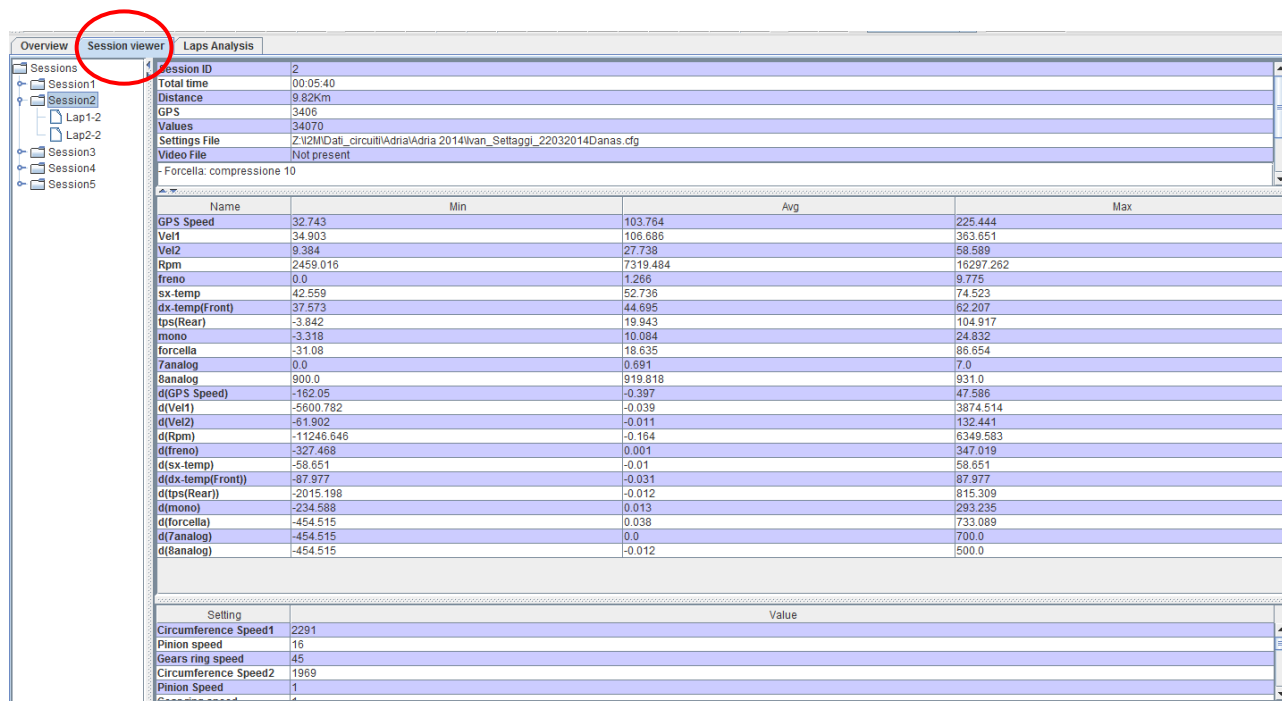


Fig. 47 – Selected Info Window

SESSION VIEWER

This is a Tab of the main window. Here you find a summary of all data of all loaded sessions. On the Left you have the sessions list and on the right their overall data.

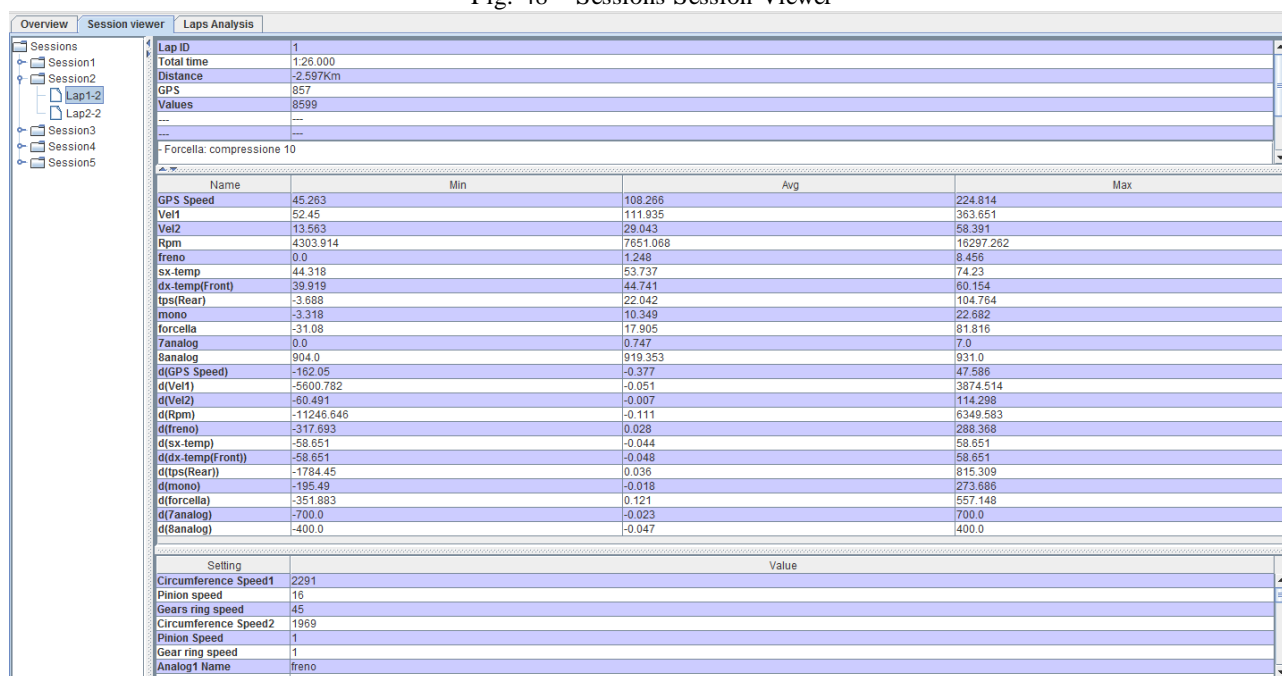
By selecting a session you can show its values while double clicking on it you can expand the tree and show the corresponding Laps. By selecting a lap you can show its values.



Name	Min	Avg	Max
GPS Speed	32.743	103.764	225.444
Vel1	34.903	106.686	363.651
Vel2	9.384	27.738	58.589
Rpm	2459.016	7319.484	16297.262
freno	0.0	1.266	9.775
sx-temp	42.559	52.736	74.523
dx-temp(Front)	37.573	44.695	62.207
tps(Rear)	-3.842	19.943	104.917
mono	-3.318	10.084	24.832
forcella	-31.08	18.635	86.654
f7analog	0.0	0.591	7.0
f8analog	900.0	919.918	931.0
d(GPS Speed)	-162.05	-0.397	47.586
d(Vel1)	-5600.782	-0.039	3874.514
d(Vel2)	-61.902	-0.011	132.441
d(Rpm)	-11246.646	-0.164	6349.583
d(freno)	-327.468	0.001	347.019
d(sx-temp)	-58.651	-0.01	58.651
d(dx-temp(Front))	-87.977	-0.031	87.977
d(tps(Rear))	-2015.198	-0.012	815.309
d(mono)	-234.588	0.013	293.235
d(forcella)	-454.515	0.038	733.089
d(f7analog)	-454.515	0.0	700.0
d(f8analog)	-454.515	-0.012	500.0

Setting	Value
Circumference Speed1	2291
Pinion speed	16
Gears ring speed	45
Circumference Speed2	1969
Pinion Speed	1

Fig. 48 – Sessions Session Viewer



Name	Min	Avg	Max
GPS Speed	45.263	108.266	224.814
Vel1	52.45	111.935	363.651
Vel2	13.583	29.043	58.391
Rpm	4303.914	7651.068	16297.262
freno	0.0	1.248	8.456
sx-temp	44.318	53.737	74.23
dx-temp(Front)	39.919	44.741	60.154
tps(Rear)	-3.688	22.042	104.764
mono	-3.318	10.349	22.682
forcella	-31.08	17.905	81.816
f7analog	0.0	0.747	7.0
f8analog	904.0	919.353	931.0
d(GPS Speed)	-162.05	-0.377	47.586
d(Vel1)	-5600.782	-0.051	3874.514
d(Vel2)	-60.491	-0.007	114.298
d(Rpm)	-11246.646	-0.111	6349.583
d(freno)	-317.693	0.028	288.368
d(sx-temp)	-58.651	-0.044	58.651
d(dx-temp(Front))	-58.651	-0.048	58.651
d(tps(Rear))	-1784.45	0.036	815.309
d(mono)	-195.49	-0.018	273.686
d(forcella)	-351.883	0.121	557.148
d(f7analog)	-700.0	-0.023	700.0
d(f8analog)	-400.0	-0.047	400.0

Setting	Value
Circumference Speed1	2291
Pinion speed	16
Gears ring speed	45
Circumference Speed2	1969
Pinion Speed	1
Gear ring speed	1
Analog1 Name	freno

Fig. 49 -Laps Session Viewer

FILE MENU

Here you can Open or Close data files, load , save and export data.

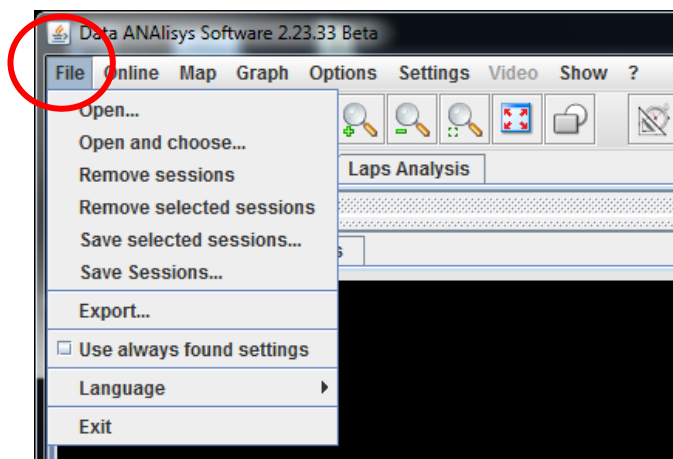


Fig. 51 – File Menu

Open, Open and Choose

To open a new data file you have two options: ‘**Open...**’ and ‘**Open and Choose...**’. The first is to load a whole file: automatically Danas will load all file sessions. The latter is to open a file and choose which sessions are to be loaded and with which settings file.

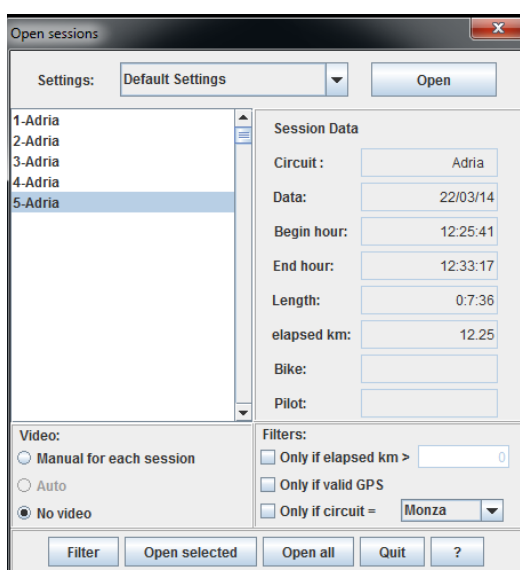


Fig. 52 – Open and choose

You choose the file to be opened and Danas will load a summary of the recorded sessions. Danas automatically recognizes the circuit (if available in its Finish Line list) and prompts its name, if the track is not in the list you'll find the name "Not available" in the list of the recorded data. You can scroll the session list on the left and on the right you'll have a summary of sessions data such as start and end time, elapsed time, date, distance in km. The set of available data depends on the

acquisition system, i.e. if you recorded with miniLAP you don't have the date while 'bike' and 'pilot' will be available soon with next Danas release.

It is worth noting that sessions summary data are computed ONLY on GPS points of the session, if these are not available or incomplete, the summary could be unreliable.

In the section "Filters", on the bottomright corner, you can choose additional criteria to load only a subset of the file sessions. You can choose to load only those sessions with a covered distance (in km), this way you can avoid loading all that fake sessions created by paddock movements or pit lane transits. Moreover you can choose to load only sessions with a valid GPS. The last flag is to choose sessions filtering them by track name. You can also use combination of the three flags. Once your filters are configured you have to press "Filter".

You can also use Shift or Ctrl buttons to extend your selection to all and only the desired sessions (the summary on the right will refer to the first selected). Then you can load them using "Open Selected", while "Open All" will open all the sessions currently in the list.

With this function "Open and Choose..." you can also link each session to a video and/or to a setting file while loading them. As for the video you have to use the flag in the bottomleft corner of the window "Manual for each session", then an interactive window will guide you to select the appropriate file.

The top part of the window is to select the settings file. Here you find the file name to be used and with the 'Open' button you can choose a new one. If you are opening a data file saved with Danas2.x you can also choose (in the drop down menu) "File Added"; Danas2.x can in fact save the settings file within the data one [if the settings file is not available, Danas will use the default one].

Remove sessions, Remove selected sessions

With 'Remove sessions' and 'Remove selected sessions' you can erase from memory all sessions data or only selected sessions data.

Save sessions, Save selected sessions

With the same criteria 'Save sessions' and 'Save selected sessions' are to store all sessions data or only selected sessions data.

Export

'Export' allows to export, with an interactive window, sessions or laps, all or only the selected ones, in kml format (compatible with Google Earth – using this program you can have the GPS typical offset).

Language

Here you can set Danas language.

Always use found settings

When you acquire with Chrome system, it exports in the same folder the settings file too. Danas is ready to automatically find this file if correctly present in the same folder, then asked you if this file is the one to be used while loading data. If you enable this option, Danas will always use the file without prompting for an answer.

ONLINE MENU

Here you can manage all connected devices

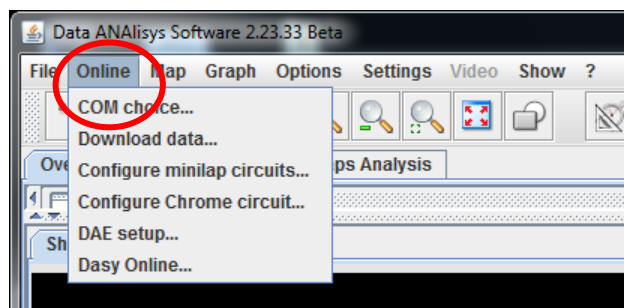


Fig. 53 – Online Menu

- **COM choice:** The first option is to set the COM port to plug your device to. By the drop down menu you can choose the desired COM port. If you don't know which one you are using you can ask Danas to find out it for you. You have to use the button 'Find' and Danas will identify the first COM port with an I2M device plugged, once the search successfully ends, press OK to confirm the choice. [keep in mind that when using a miniLAP you need to set it in 'download mode' prior to be connected to Danas].

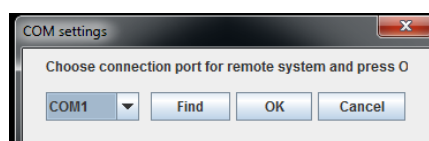


Fig. 54 – COM choice

- **Data Download:** here you download data from a connected device or erase its memory. From the interactive window select the device and press 'Connect'. Once connected you can access the device and download its data, with the 'Download' button, or erase its memory, with the 'Format' button. With the option 'Save into file' you can choose the file name in which all data will be saved (file name is to be chosen *before* download).

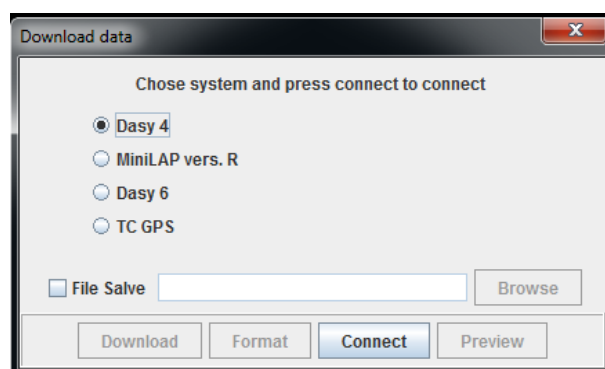


Fig. 55 – Data Download

If you are using a Dasy6, once connected, you can have a "Preview" of the available sessions (see picture below). In a dedicated window you find, with valid GPS, a summary of circuit, date and time. Three filtering criteria are available to load only a sessions subset and the open all the

sessions in the list or only the selected ones (please compare with ‘Open and choose’ in File Menu).

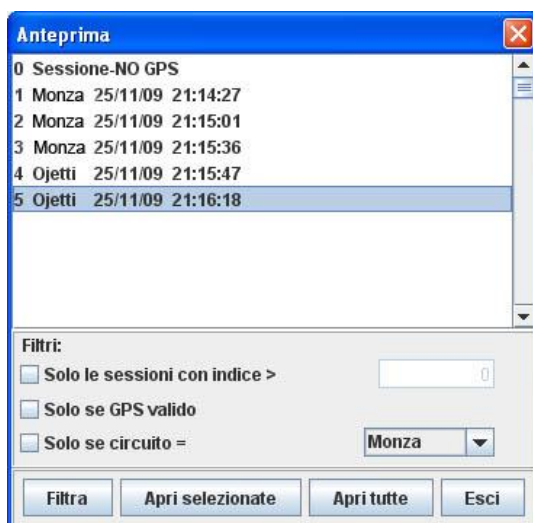


Fig. 56 – Data Download

- **configure miniLAP circuits:** by choosing this option you open the library interface:

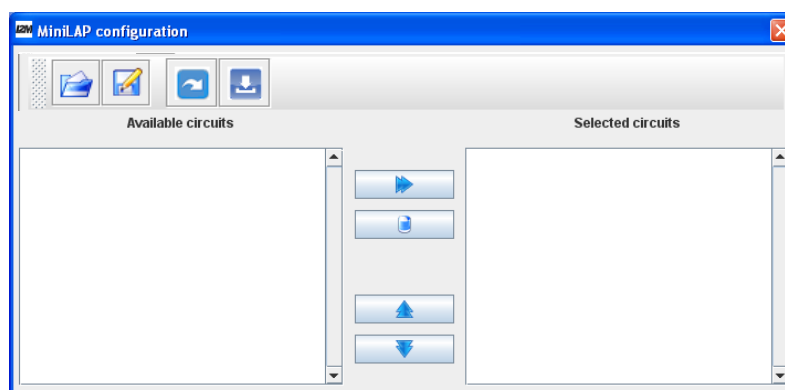



Fig. 57 - miniLAP circuits setup

The right box is to receive all circuits downloaded from miniLAP or ready to be saved on it. The left box is to list all the available circuits (previously saved on a file) to upgrade miniLAP library.

The button  is to download miniLAP data, to obtain something like the pic below:

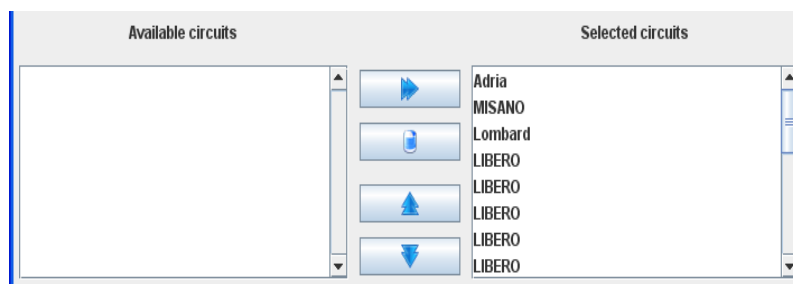



Fig. 58- circuits downloaded from a miniLAP

Free circuit spots are named with “LIBERO”, all others will have the circuit name.

By the button  you can load a file with a list of previously saved circuits:

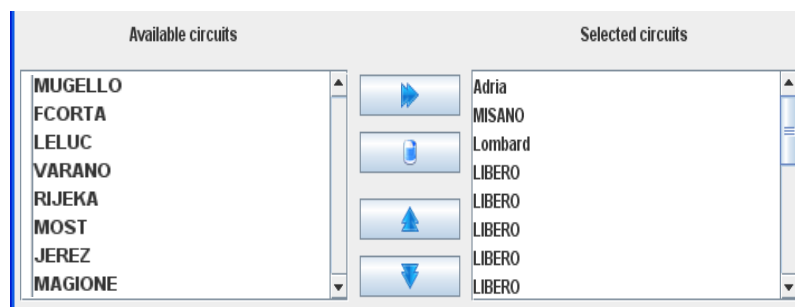





Fig. 59 - Load circuits

Button  is to erase circuits of selected rows.

With  and  respectively you can move up or down selected circuits.

Button  is to transfer the selected circuits from available (left box) to the ones to be uploaded (right box). This button is disabled if the number of uploadable circuits has already reached 20 that is the maximum number of circuits you can store on a miniLAP; in this case you need to delete some circuits before you can select a new one. For example from a situation like the following

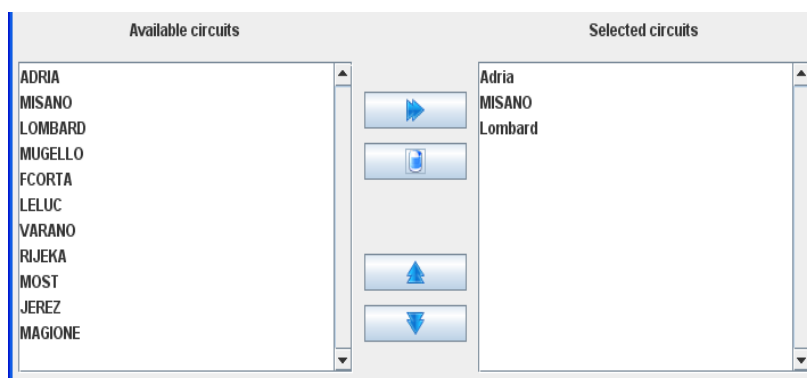



Fig. 60 – transferring circuits

You can select 3 tracks from the left box and with the button  you'll have:

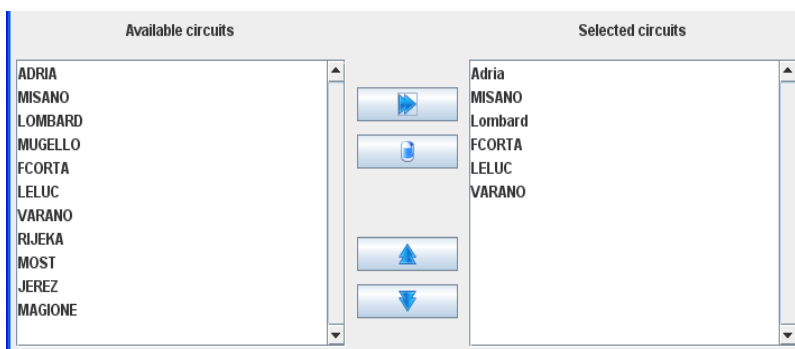




Fig. 61 – transferred circuits

The button  is to save on a file your customized compilation (right box), while button  is to upload that on miniLAP. If your personal list has less than 20 tracks, the remaining rows will have “LIBERO” label, these are free spots available to store other tracks.

WARNING: when you are trying to upload on a miniLAP a circuit with a different Finish Line compared to the stored one, its Best Time will be erased (it would have no sense anymore)

WARNING: Stored Laps will not be removed.

WARNING: on miniLAP pre-loaded circuits Finish Line position may not be exactly the real one, it can be slightly shifted in order to avoid fake shots while passing on the pit lane.

- **Configure Chrome circuits:** this function is perfectly the same of “Configure minLAP circuits” so please refer to that paragraph for details. By this function you create a 20 circuits files to be uploaded (please note that a file with less than 20 circuits is not allowed).
- **DAE setup:** by this function an interactive window will guide you to DAE setup.

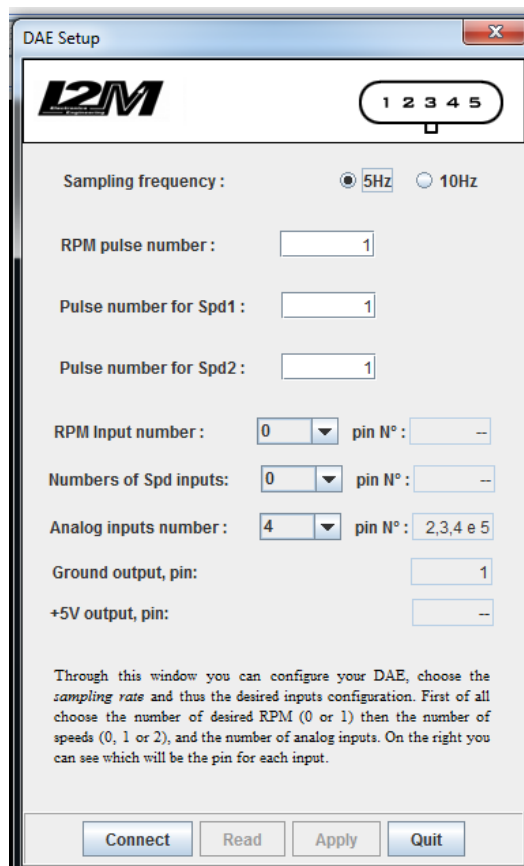


Fig. 62 – DAE setup

You have to choose the COM port, plug DAE, turn on miniLAP and press 'Connect' to start the setup. Once connected the current DAE setting is loaded.

From the top you can set sampling frequency [5Hz or 10Hz], we suggest to usually use 5Hz and to leave the 10Hz only for suspension signals.

Then you can set RPM, Speed1 and Speed2 pulses. Configure these options only if you need to use the corresponding channels.

RPM Pulses: These are the number of pulses generated by the control unit for each gear round. Usually this number is one or two depending on bike make and model so if you don't know it you can easily find the correct value by few attempts.

Speed 1 pulses: You have to set number of pulses for each pinion round. If your speed is acquired by a pinion sensor (standard signal from the control unit) this number is the number of pulses generated by the sensor itself. If the sensor is measuring directly wheel rounds, this number is the number of pulses for each wheel round. This number is drastically different from bike to bike, it can vary from 1 to 30 or 40, for this reason if you don't know it you need to perform attempts comparing Speed1 with GPS speed to set the correct value.

Speed 2 pulses: same as speed 1 pulses but for the second speed.

Number of Inputs: these parameters are to set how many inputs you intend to use for each kind of signal (rpm, speed, analogs, 5V output). In the drop down menus you find the available choices (0 or 1 for RPM; 0,1,2, for speeds ...). Keep in mind that you need to choose starting from the top (RPM) and going down. Beside the drop down menu you'll find the input pins on which those input will be set. You'll find the same numbers stamped on your DAEAMP connector in order to identify the right pins/inputs. In the above picture we choose to have 4 analog inputs on pins 2,3,4,5. Pin 1 is always reserved for ground.

WARNING: If you are enabling the 5V output, carefully check it is not connected to any sensor output or shorted with ground, in order to avoid damaging to sensors or dangerous shorts.

Once you set up your desired configuration it is possible to save it on DAE by the 'Apply' button, while with 'Read' you download DAE configuration.

- **Dasy on-line:** By this function you can connect your Dasy system on-line, so acquiring data real-time and being able to configure all hardware parameters for speed and RMP pulses.

Begin by Connecting the device. The window has two distinct Tabs, the first for digital channels, the second for analog channels.

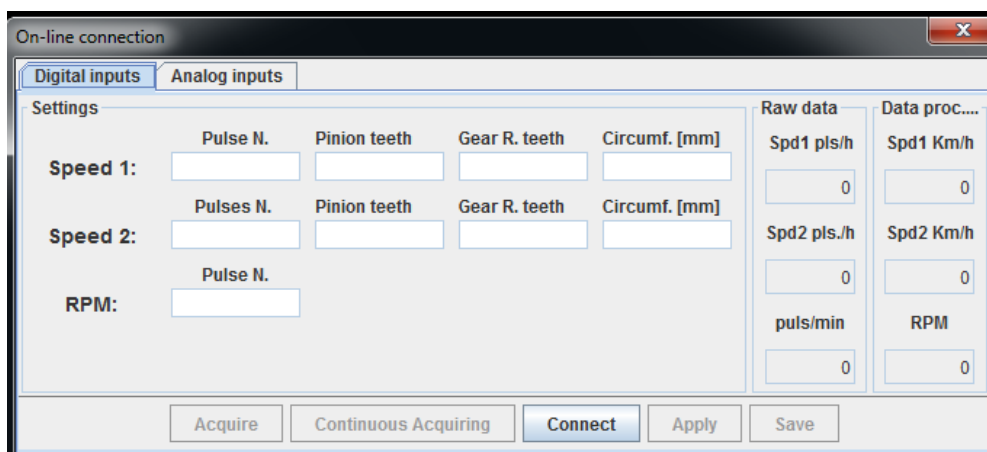


Fig. 63 – Dasy on-line for digital channels

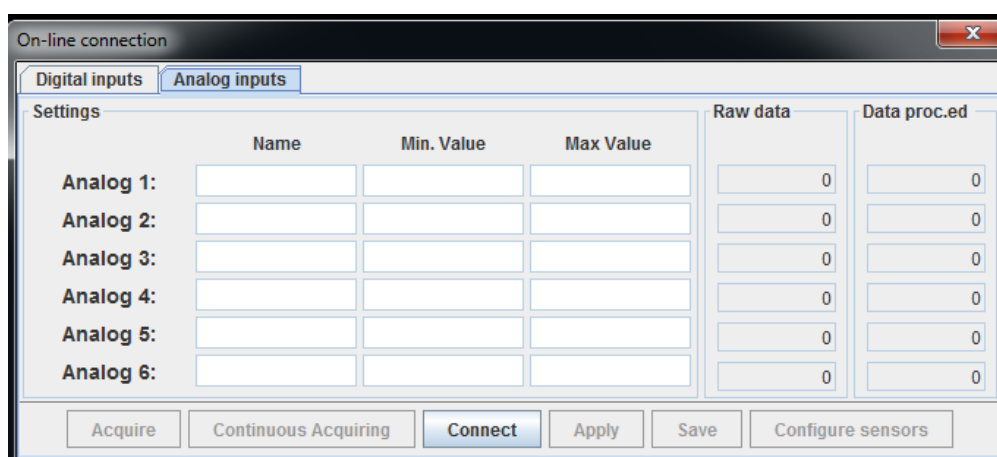


Fig. 64 – Dasy online for analog channels

Both tabs have three boxes:

- **Settings:** in this area you find all configuration parameters that are read as Dasy plug-in (hardware parameters)
- **Raw Data:** in this area you find all raw data acquired by Dasy
- **Processed Data:** in this area you find all data processed by the setting parameters of the previous sections

Hence you have three buttons:

- **Acquire:** it performs a data sampling from Dasy and shows them in the appropriate boxes (raw data and processed data)
- **Continuous Acquiring:** it performs a continuous data sampling from Dasy and shows them real-time in the appropriate boxes (raw data and processed data), sampling frequency is about 1Hz.
- **Configure sensors:** by this function you can configure online settings for typical analog sensors.

By manually changing the values in settings cells, you can immediately see how this affects processed data (press 'Apply' button)

MAP MENU

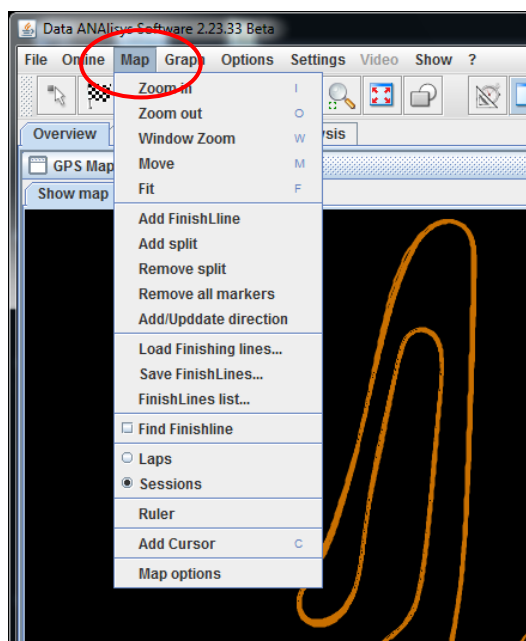


Fig. 65 – Map Menu

By the Map Menu you can set the following functions:

- **Zoom In:** you can zoom in the map, by clicking in one point the map will zoom in keeping the selected point as its center.
- **Zoom Out:** you can zoom out the map, by clicking in one point the map will zoom out keeping the selected point as its center.
- **Zoom Window:** you can select a rectangle on the map, the selected portion will be zoomed so to fit the available window size.
- **Move:** you can move the map by simply clicking and dragging. You can also zoom in or zoom out using mouse wheel.
- **Fit:** this function will fit the maps for all the visible sessions.
- **Add Finish Line:** you can add a Finish Line. By moving the cursor on the map, it will set the size and position of the finish line. Clicking on the map the finish line will be set at the cursor current position. If you need to change its position you only have to set a new one in a different position.
- **Add a split:** you can add split along the track. All splits should be crossed by all laps and should be set in the right order (i.e. do not set split3 along the track before split2). On the table, in the laps tab, all the splits will be created. If the split is not valid (not crossed by all laps or in the wrong order) its cell will have a red background.

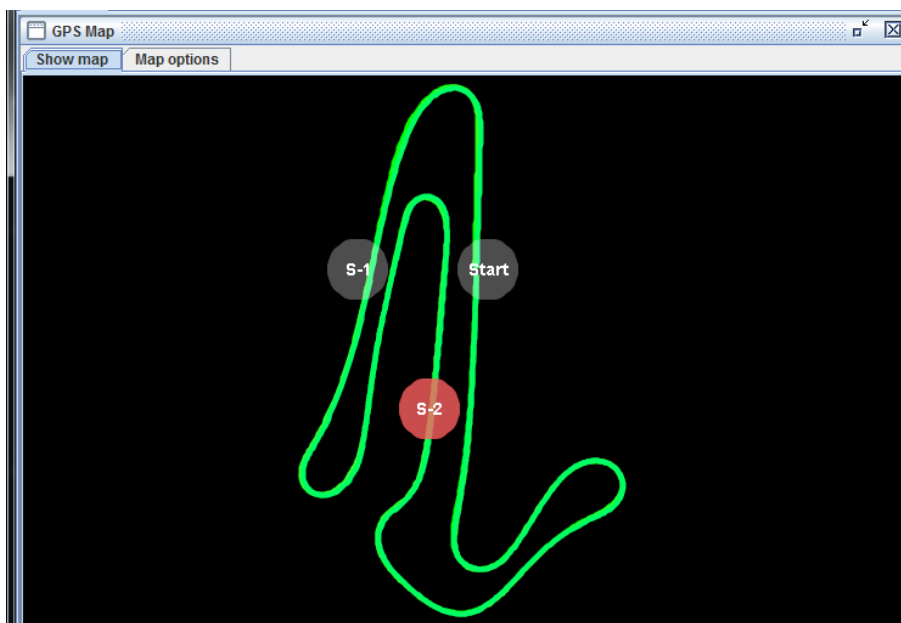


Fig. 66 – Finish Line and Splits

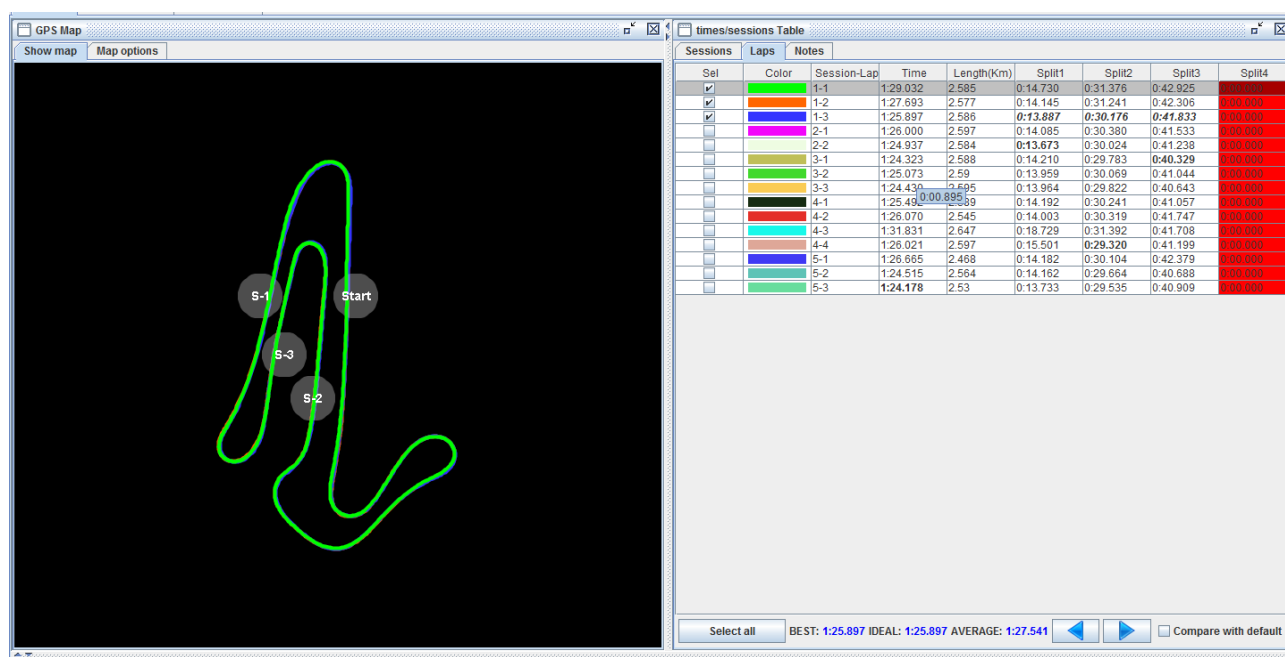


Fig. 67 – Wrongly set split3

- **Remove Split:** You can remove a previously set spit, just click it with mouse pointer.
- **Remove all markers:** removes the finish line and all splits from the map.
- **Add/Modify direction:** you can link a direction to each split or to the finish line. When you add a Finish Line or a split you don not set a direction by default, that implies that the Split/Finish Line is crossed by a lap whichever direction it crosses its circle. In case of a rough GPS signal or for small tracks it could happen that for instance the finish Line is crossed by lap lines of the counter finish straight. For this reason it is possible to choose a

direction to be assigned to each crossing. Set the mouse pointer on the desired crossing, press the right button, the default direction from west to east will appear, drag the arrow to choose the desired direction. The arrow will be hidden at the end of the procedure, pass over with mouse cursor in order to show it again. Whenever you add or modify a direction, all laps and their times will be recalculated

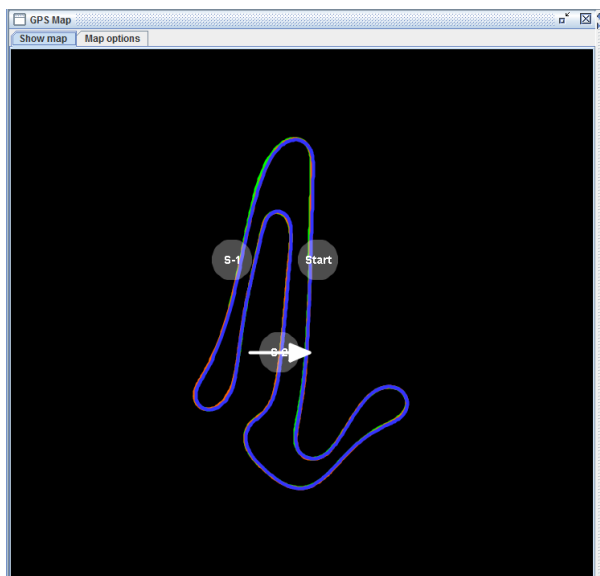


Fig. 68 – default direction for split2

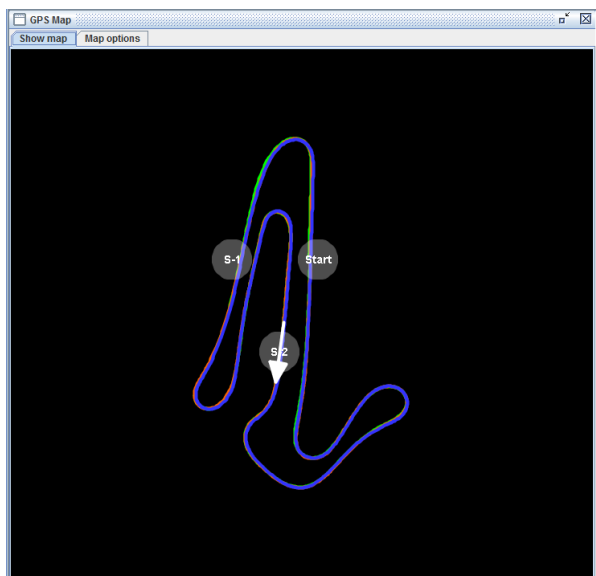


Fig. 69 – desired direction for split2

All default Danas2 Finish Lines are already set with their correct direction, when you load them you'll load their coordinates and their directions.

- **Load Finish Line:** you can load a default finish line or a previously saved one. A list will appear and you can choose the desired one. Press Open

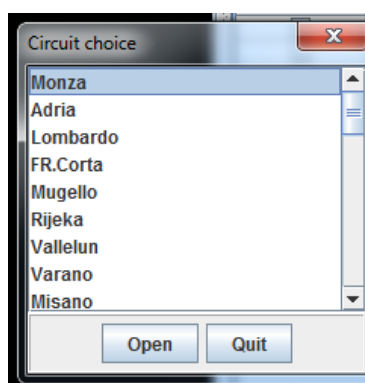


Fig. 70 – Finish Line List

- **Save Finish Line:** you can save Finish Line and Splits currently in use, with their direction too. You only need to name the configuration (max 8 char). Once saved, the track will be available in the list of available circuits. You can also overwrite an already existing one with your preferred settings.

- **List of Finish Lines:** You can manage all the available circuits. The dedicated window will show the finish line list on the left and on the right all their features: names, coordinates, directions

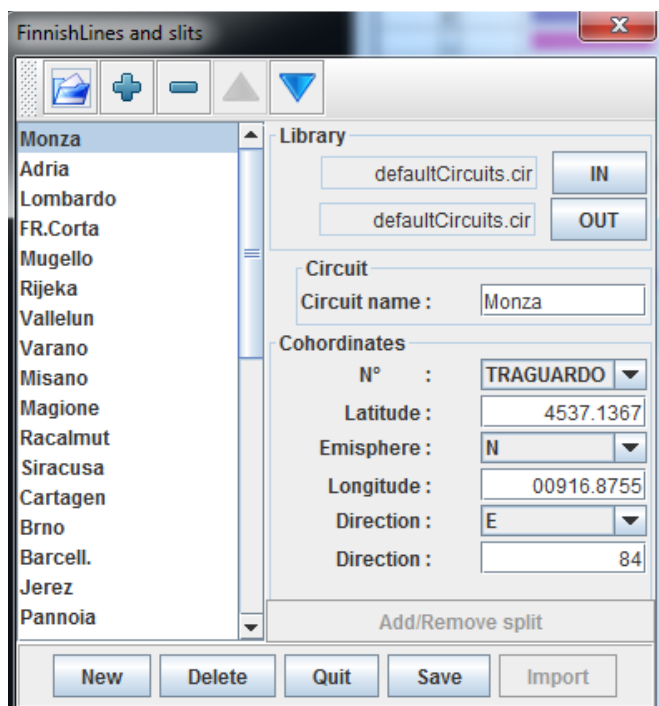


Fig. 71 – Finish Line list

In tab coordinates on item 'N°' you can choose the Finish Line or a split and underneath you'll see its properties. With Add/Remove Split you can add/remove a split and then modify its properties. Remember to Save before exiting to let all the modifications /insertions take place

With New/Delete (or '+', '-') you can add or remove a whole track while with arrows button you can change their order in the list. Open and Save are to Load a track list and to save the current one. The same functions are available in Library box where you can set the opened file (IN) and where you are saving the customized list (OUT). You can either modify the default file or create a customized one.

- **Find Finish Line:** With this function you set Danas2 to find a Finish Line when loading new data. If this option is flagged Danas2 will search among the available Finish Line one close enough to the GPS positions of the loaded data, and if found, will set it. This function is available only when there are no Finish Lines already set.
- **Laps/Sessions:** allow you to switch between Laps or.
- **Ruler:** you can measure distances on map by this ruler, you just have to click on the first point and drag to the second. A label will appear with the measured distance (in meters).

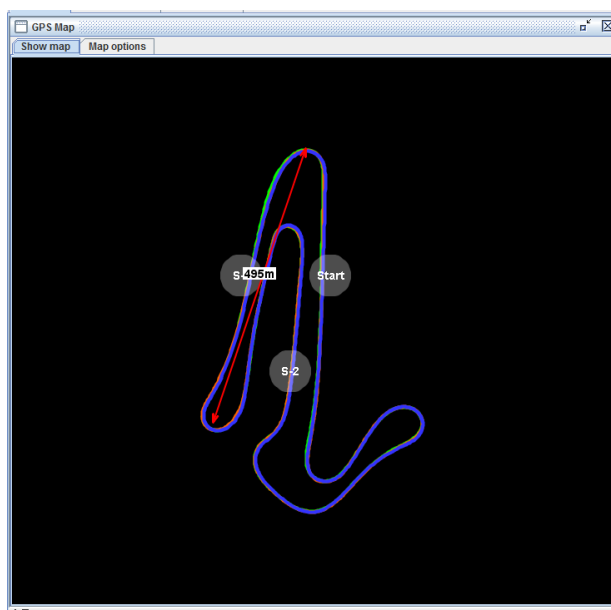


Fig. 72 – Ruler

- **Add cursor:** You can add a cursor on the map. A cursor is a white circle with a black arrow pointing towards the direction of the track in that point. You can move the cursor by scrolling mouse wheel or dragging it.

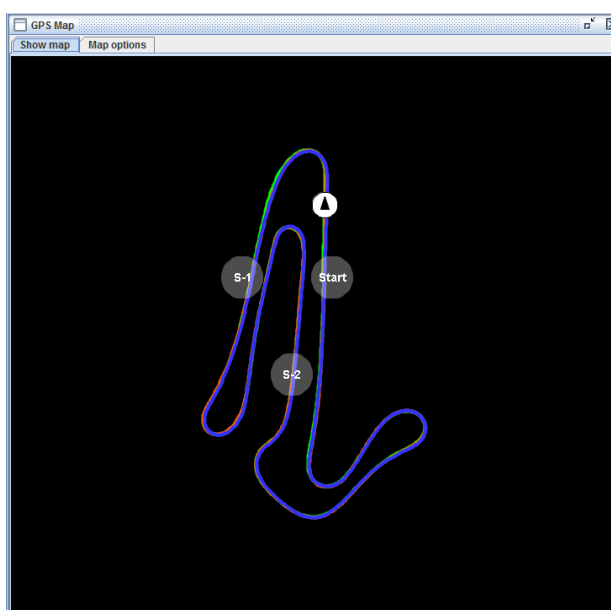


Fig. 73 - Cursor

If you activate a cursor on the Graph too, the two of them are synchronized so to show for each graph point you'll know the exact position on the map (see further on in this manual).

WARNING: The cursor follows the track / graph of the default session/lap.

- **Map Options:** shows all map options.

GRAPH MENU

By Graph Menu you can use the following functions:

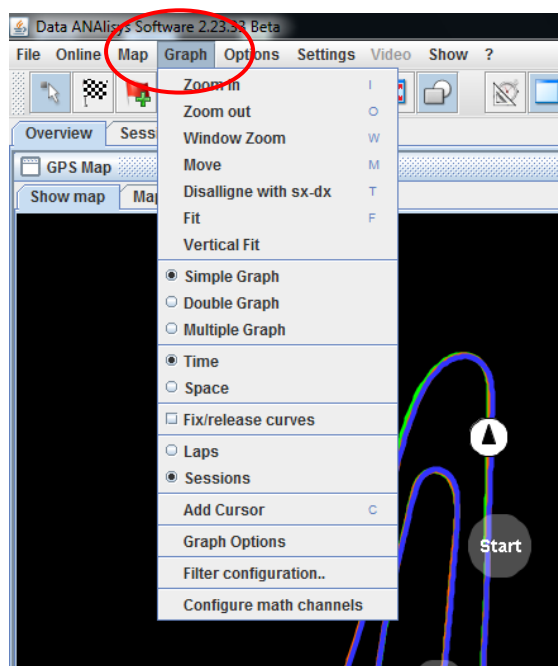


Fig. 74 – Graph Menu

- **Zoom In** : you can zoom in the graph, by clicking in one point the graph will zoom in keeping the selected point as its center.
- **Zoom Out**: you can zoom out the graph, by clicking in one point the graph will zoom out keeping the selected point as its center.
- **Zoom Window** : you can select a rectangle on the graph, the selected portion will be zoomed so to fit the available window size.
- **Move**: you can move the graph by simply clicking and dragging. You can also zoom in or zoom out scrolling mouse wheel.
- **Fit**: this function will fit all the current graphs.
- **Vertical Fit**: it will best fit y-axis for the plotted channels.
- **Single/Double/Multiple Graph**: here you can choose graph appearance. Simple: all graphs will be plotted in the same window. Double: the main window will be split in two of the same size and you can choose to plot each channel in the upper or in the lower one. Multiple: Each channel graph will have its own window.

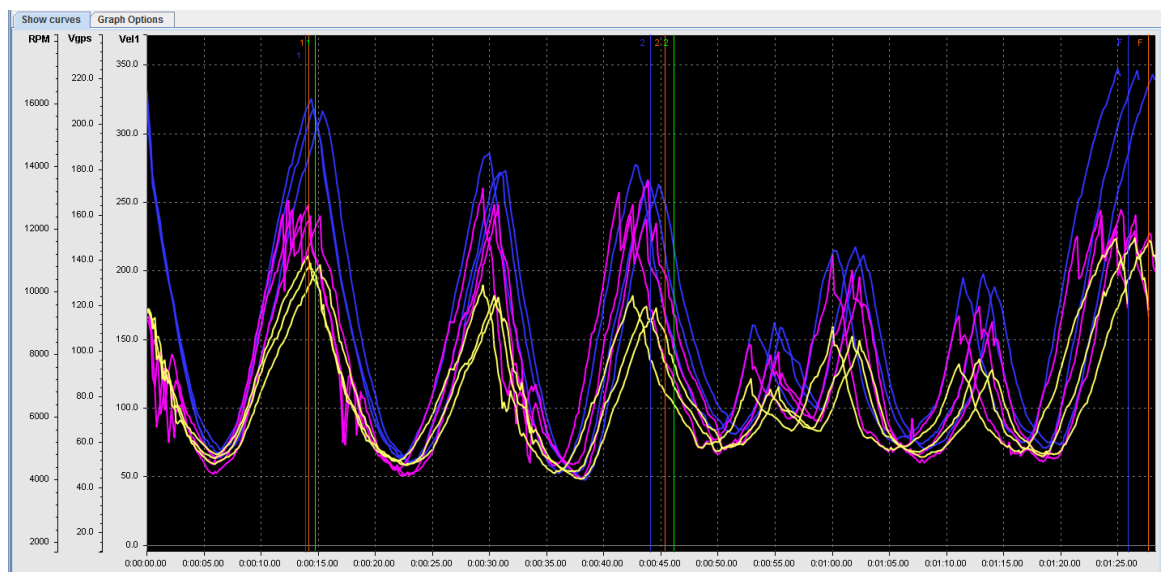


Fig. 75 - Simple

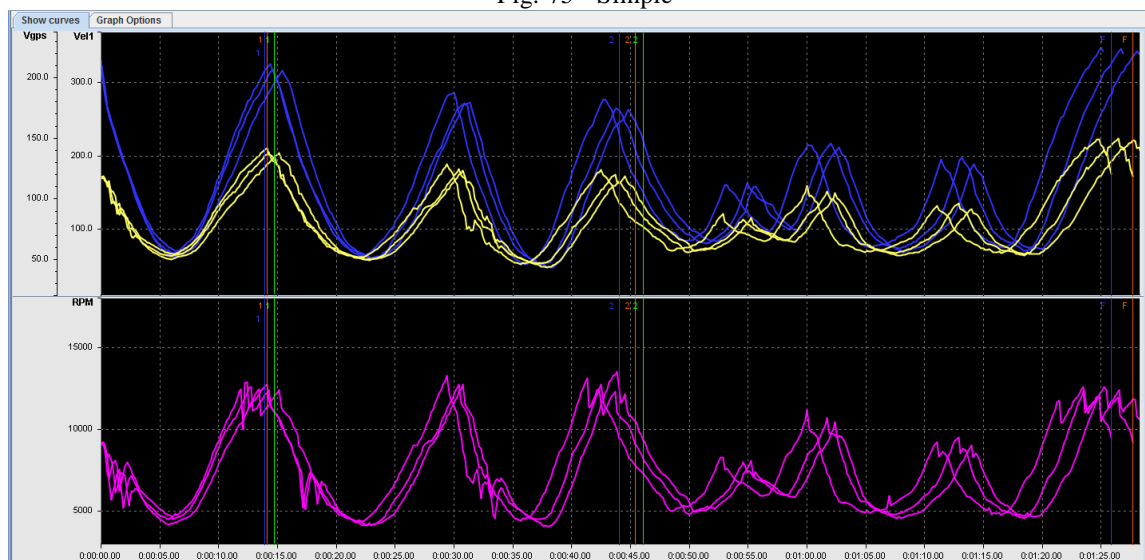


Fig. 76 - Double

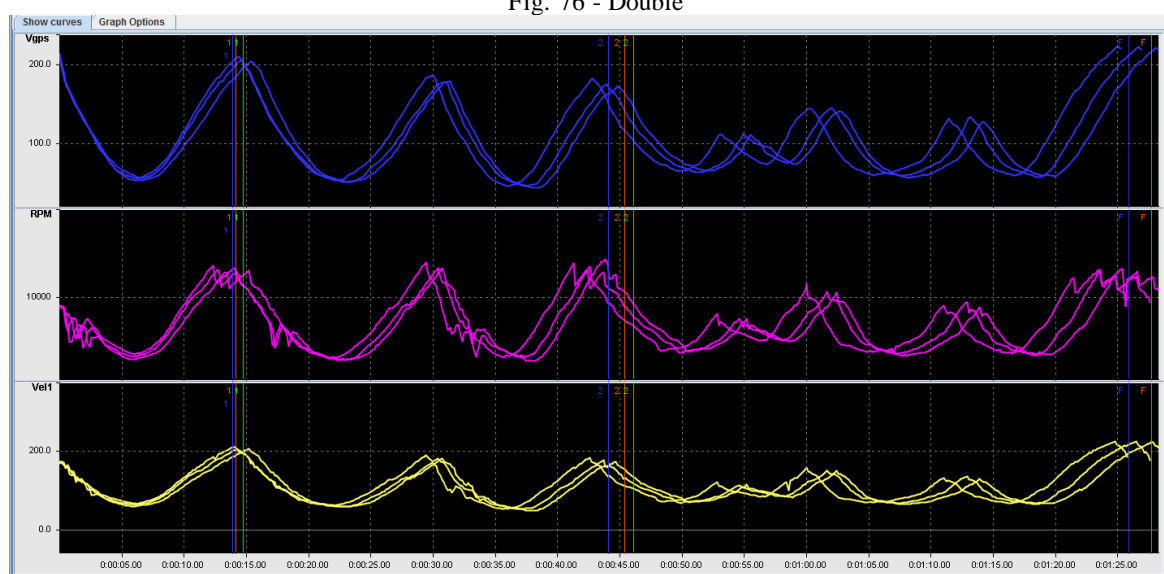


Fig. 77 - Multiple

- **Distance/Time:** you can set the x axis either in time [sec] or in distance [meters]

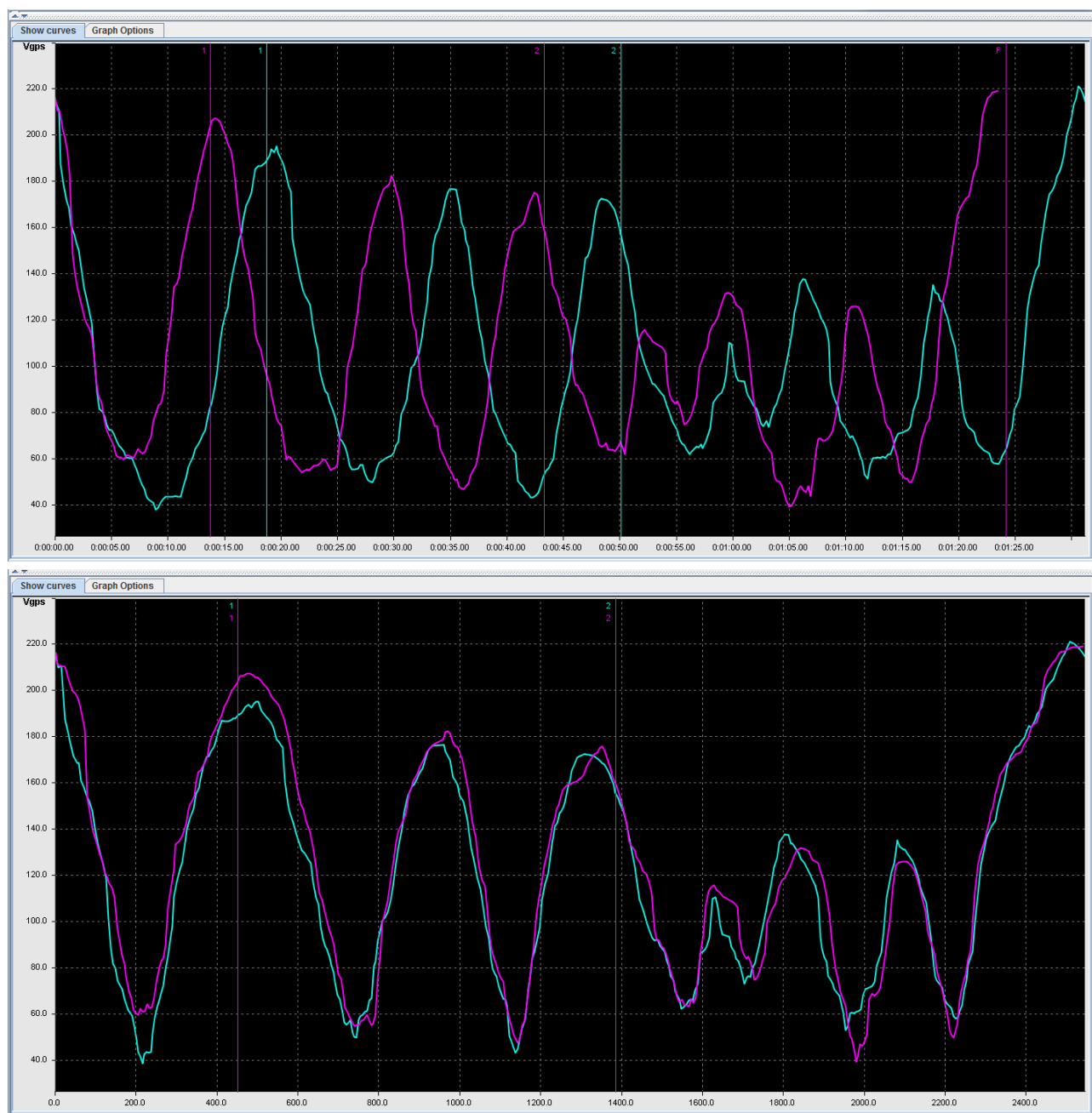


Fig. 78 - Same graph but x axis in time or in distance

WARNINGS: in distance mode, distance is calculated with reference to the default session/Lap. If you plot all laps, these are shortened/stretched as to be fit the same length of default one. This plot is more accurate the more split you added (the fitting procedure is performed split by split)

- **Fix/Release curves:** you can move horizontally one graph path to the respect of the others. It can be helpful, in Lap and Time mode, so you can align the paths on any desired point not only on the Finish Line, for example you can compare two distinct laps aligning them on a specific corner. When you activate this function the reference is again the Default Lap that is always plotted, then you can choose which laps are to be moved. Activate the function from this menu or by the fast icon on the bar. Once activated the default lap will be activated, then you can select the laps to be moved (deselecting them the offset would come back to zero). Once selected (even more than one) you can choose which laps to move clicking on their names. The line will have a green background and can be translated.

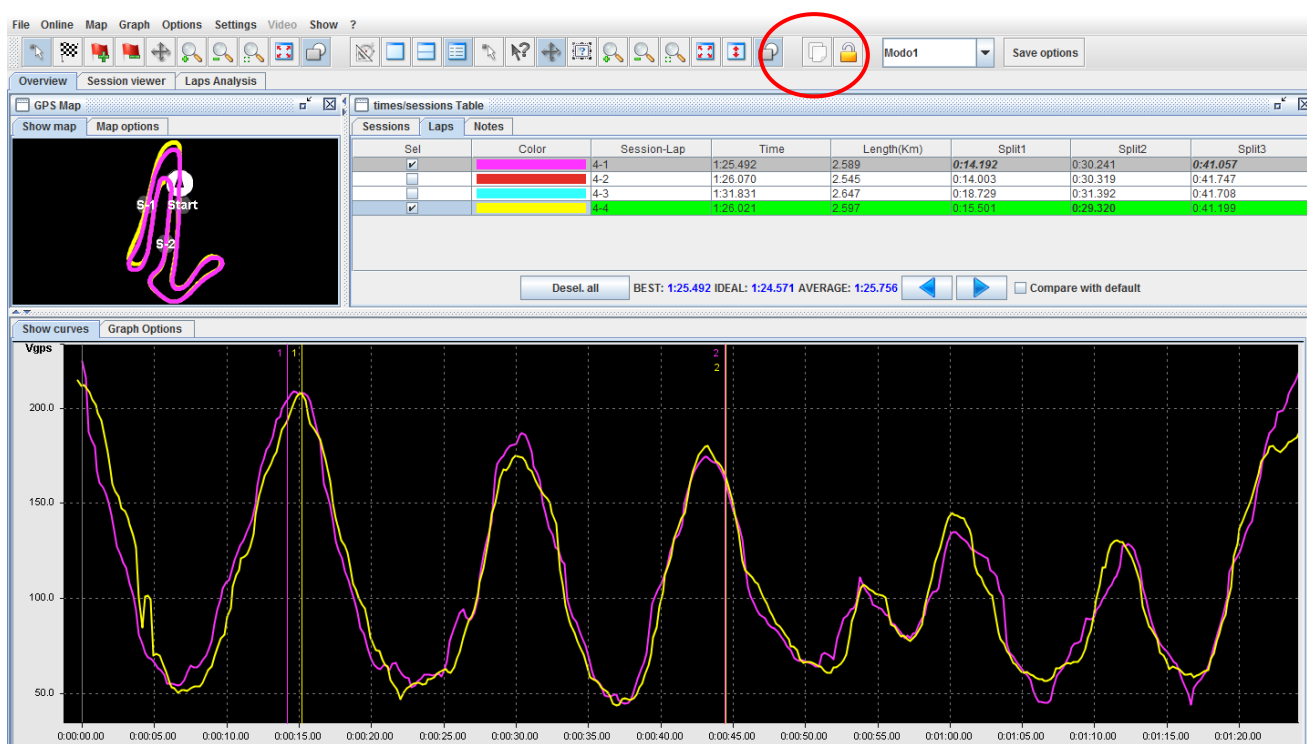


Fig. 79 - Fix/Release curves

To move green selected laps you can use two ways:

- 3) By the “Move” mode, or using the icon with the lock, you can translate graphs dragging them with right mouse button
- 4) By “disalign with sx-dx”, or using the icon with paper sheets, you can translate curves clicking the starting point with left button and the end point with right mouse button.



Fig. 80 –Icons for ‘move’ and ‘disalign’ graphs

- **Laps/Sessions:** allow you to switch between Laps or Sessions.

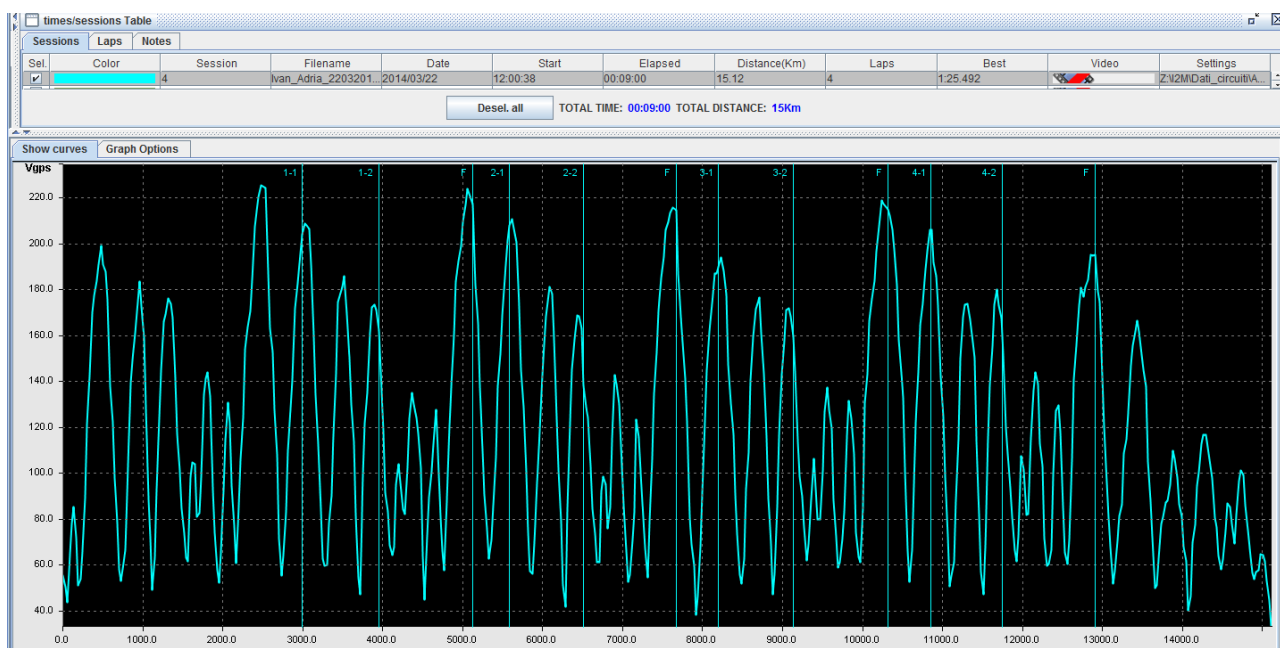


Fig. 81 – Sessions

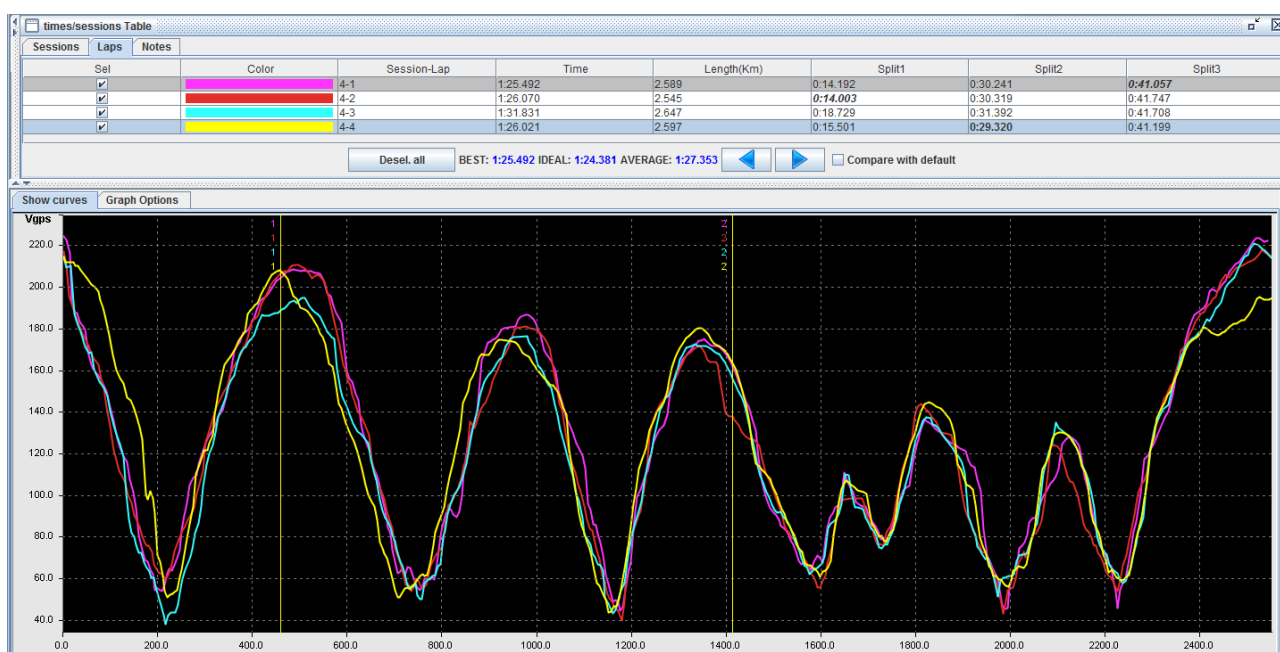


Fig. 82 - Laps

- **Add cursor:** you can add a cursor on the graph paths, it is symbolized by a vertical red line, you can drag and drop wherever you like. This graph cursor is synchronized with map cursor and with the video so you can follow exactly graph position and map position. Keep in mid that cursor position is always related to default Session/Lap.

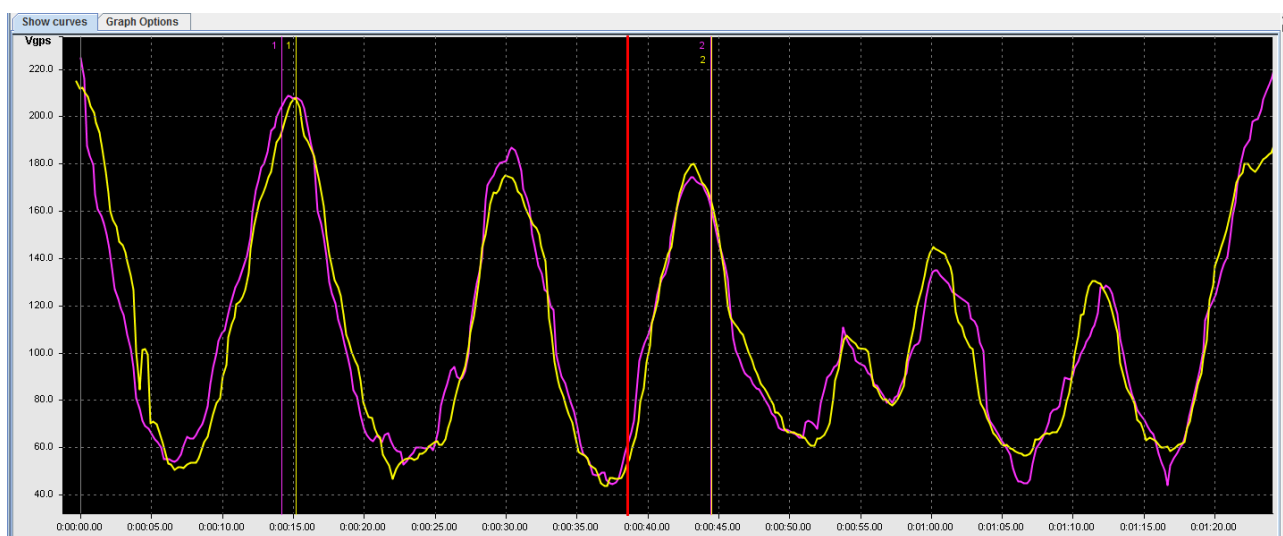


Fig. 83 – Graph Cursor

- **Graph Options:** will show the dedicated Tab
- **Filters Setup:** this window is for filters setup For each channel (with the exception of multi channels) you can choose the frequency for a low pass filter. With ‘Apply’ button the filters are applied while with ‘Reset’ all filters are removed.

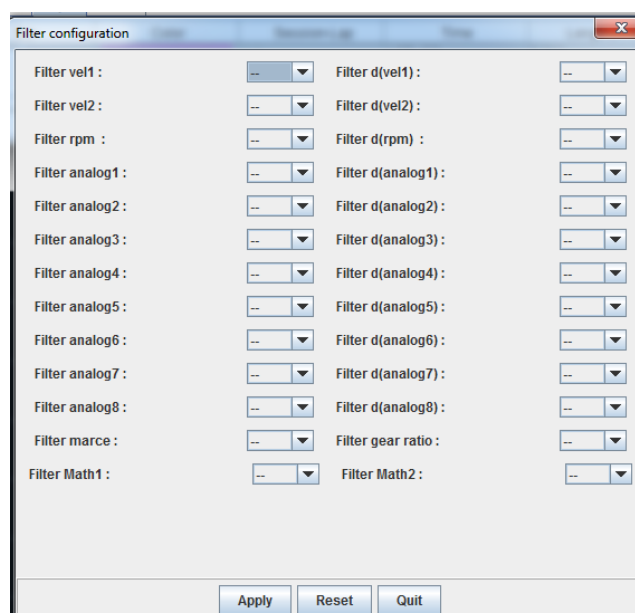


Fig. 84 - Filters

- **Math Channels Setup:** with this window you can setup two mathematical channels You can choose all the others channels as operands and the available functions. Be careful with the use of the “IF” function. Its syntax is : *IF (condition, then , else)* and its meaning is: the value of this function will be ‘then’ if the condition is true , while otherwise it will be ‘else’.

For example if we have $\text{IF}(\text{rpm} > 5000, 100, 0)$ this means the value will be 100 anytime rpm is greater than 5000 0 elsewhere.

All functions can be saved and reloaded and they can be named for a rapid reference in the info window or along the x axis.

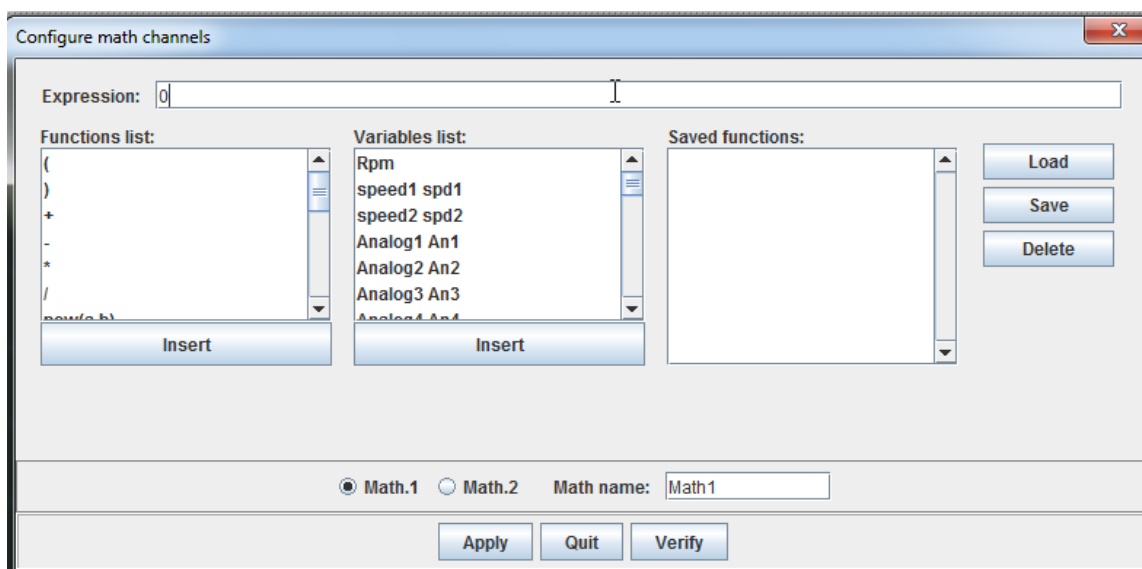


Fig. 85 - Math Channels

OPTIONS MENU

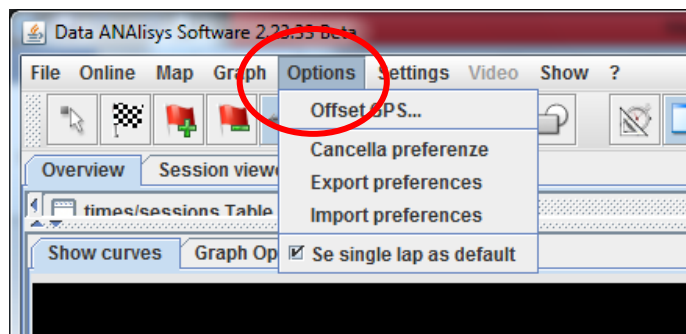


Fig. 86 – Options Menu

- **GPS offset:** This is an advanced options and we recommend to change it only if you are an expert user. In a GPS receiver there is an irremovable delay between the real position calculations and the moment it is output to the final user. By this parameter you can modify the offset between GPS data (position and speed) and system acquired data (speed, RPM...) and to minimize this delay. If you don't know the receiver delay nature, you can choose the parameter as the one that minimizes the offset between GPS speed and acquired wheel speed.

- **erase/import/export preferences:** by these functions you can erase, import and export all Danas preferences, not only graph modes, but also windows positions, dividers, files directories and so on.

- **set single lap as default:** thanks to this function Danas automatically set the selected lap as default if it is the only one selected.

SETTINGS MENU

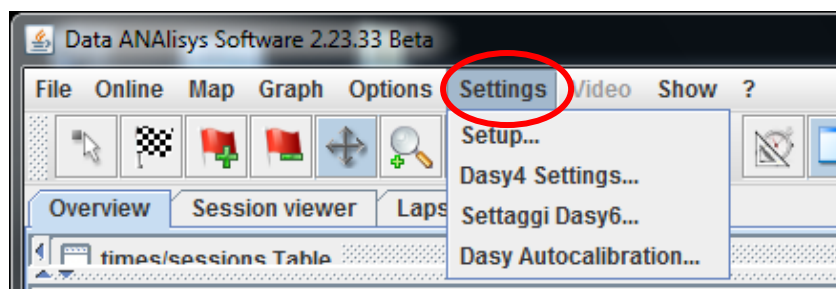


Fig. 87 – Settings Menu

Here you find the following functions:

- *Setup*: here you can create or modify a settings file
- *Dasy4 Settings*: here you can modify Dasy4 settings
- *Dasy6 Settings*: here you can modify Dasy6 settings
- *Dasy Autocalibration*: here you can auto-calibrate Dasy4 System.

SETUP

By an interactive window you can create or modify a settings file:

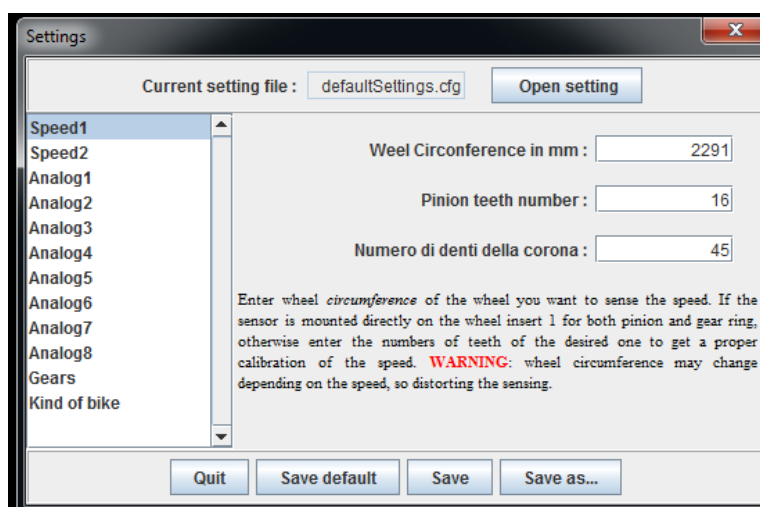


Fig. 88 - Settings

In the upper line you have the file name you are working on. By 'Open Setting' you can change the file. On the left you have all the available channels, while on the right you find the adjustable parameters for each channel.

- **For SPEED channels** you have to set wheel circumference (this measure must be very precise because it is a multiplying factor in speed calculation), pinion teeth (if the sensor is on the pinion the final teeth ration is really important), gear ring teeth (even in this case you need

to be precise, if the sensor is directly on the wheel both pinion teeth and gearing teeth should be set equal to 1)

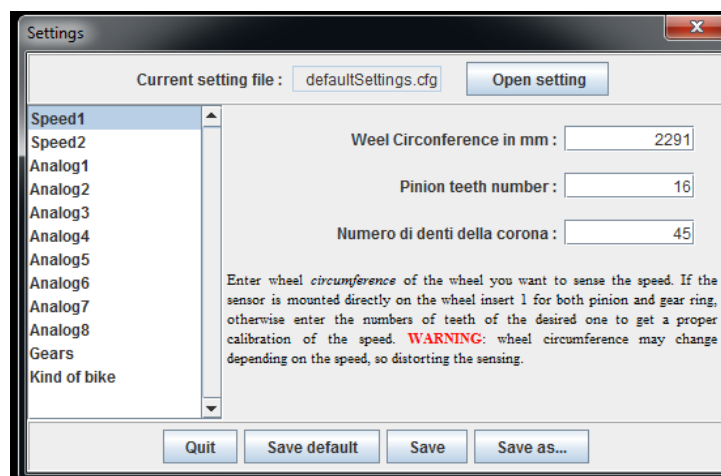


Fig. 89 – speed channels settings

- **For ANALOG channels:** you can customize the name and max and min value on the graph. Analog inputs are converted from voltage values 0-5V to a digital value from 0 to 1023, these two parameters allow to configure which is the real value you want to set when voltage is 0V or 5V. For example in a 150mm potentiometer you want a minimum value set to 0 when the cursor is at its minimum (and voltage is 0V) and a maximum value set to 150 when it is full scale. If you have a more complex sensor the conversion can be not so easy, if you have for example a TPS signal, the output from the central unit doesn't cover the full range 0-5V, you have to choose wisely in order to plot on the graph what you like. For an example and a full calculation on this matter see "Appendix A- Analog channels"

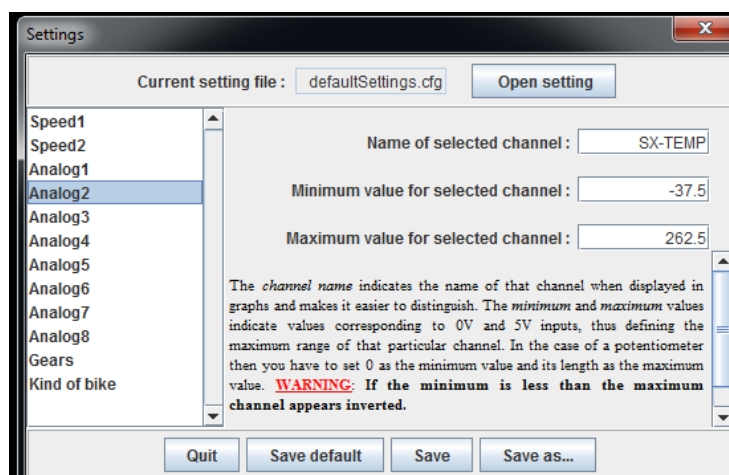


Fig. 90 – analog channels settings

- **For GEARS channel:** you need to set gear ratios, if you know ratios EngineRounds/WheelRounds-Spd1 that set ratios for your bike, you can set their values in the appropriate cell (IMPORTANT: pinion teeth must be correctly set in order to distort measurements). If you don't know your bike ratios Danas2.x provides a utility to calculate them for you. You need to load a session with all gears used for at least 10 seconds (we suggest to create a session specifically for this purpose), then press "Calculate".

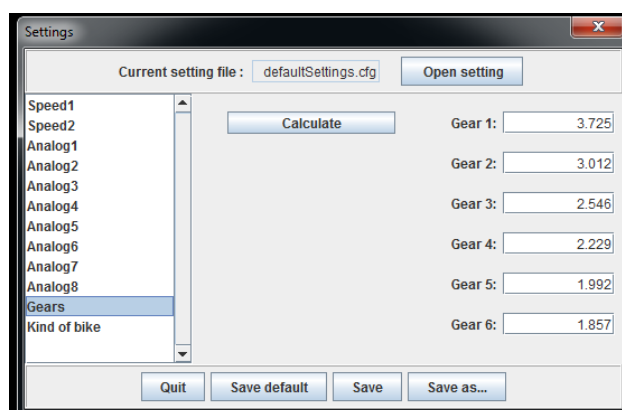


Fig. 91 – gears channels

- **Kind of bike:** if you set the right kind of bike all multi-channels name will be configured properly accordingly (available only for data acquired by Chrome dashboard).

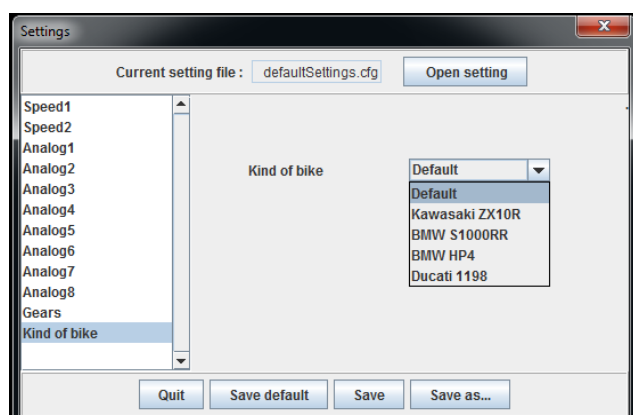


Fig. 92b – kind of bike

DASY4 SETTINGS

The interactive window will guide you in setting Dasy4 parameters:

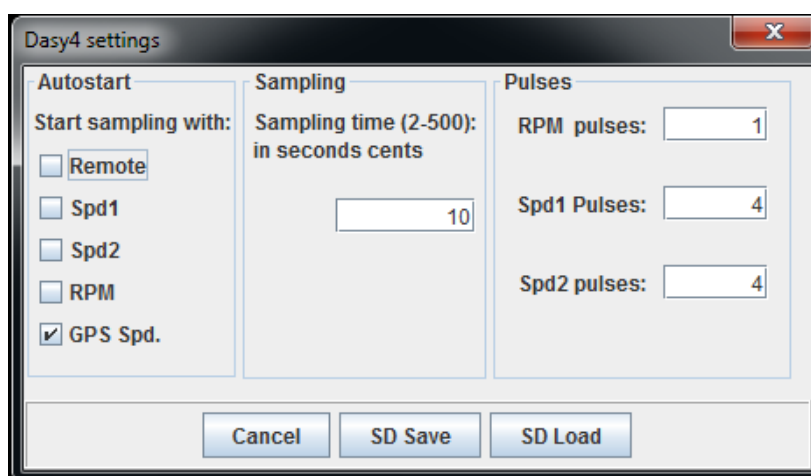


Fig. 93 - Dasy4 Settings

- **AutoStart:** here you can set the inputs that would start the acquisition. The system can be set to start acquiring when it senses a speed (GPS or sensor speed) or when it receives an IR signal or when it receives a manual remote command.
- **Sampling:** it sets the sampling frequency, this means you can set the time between a sample and the next one. The inverse ratio of the sampling time is the sampling frequency. In theory the higher the sampling frequency the more precise the acquisition, but a higher frequency implies heavy calculations and huge files. You can choose values from 2 to 500 (i.e. from 0,02sec to 5sec, that means from 50 samples a second to 1 sample every 5 seconds)
- **Pulses:**
 - o **RMP Pulses:** It shows many pulses are generated from the central unit for each gear round, usually this value is equal to 1 or 2 depending on the bike make and model, you can set it with few tries, we suggest to double check the values of the parameter.
 - o **Speed 1:** This is the number of pulses for each pinion round. If the sensor is directly on the wheel, this is the number of pulses of each wheel round. This parameter changes drastically depending on the bike make and model varying from 1 to 30 or 40, this makes harder the configuration by tries, please double check its configuration.

WARNING: often speed signal is not available if the dashboard is not plugged!!

If you don't know how to set this parameter you can use the Danas Autocalibration tool

- o **Speed 2:** Same as speed 1 but for the second speed
- **Load SD:** here you can load custom settings previously saved.
- **Save SD:** here you can save to SD all customized parameters to be available at next turn on.

DASY6 SETTINGS

The interactive window will guide you in setting Dasy6 parameters:

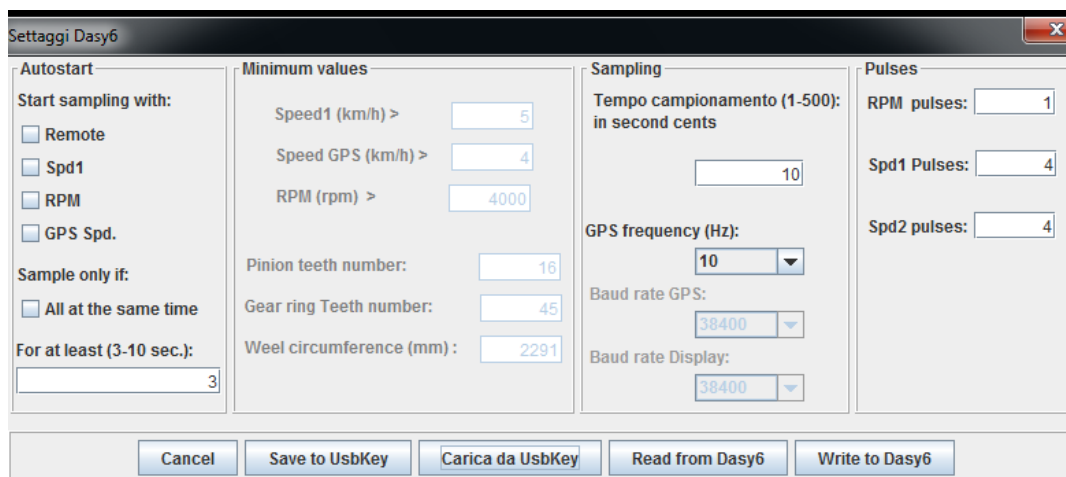


Fig. 94 - Dasy6 settings

- **AutoStart:** here you can set the inputs that would start the acquisition. The system can be set to start acquiring when it senses a speed (GPS or sensor speed) or when it receives an RPM signal or when it receives a manual remote command. With the flag “Sample only if all at the same time” is to choose to start sampling with more than an option at the same time. The last option is to set a minimum amount of time with the channels active for starting/stopping the acquisition.
- **Minimum values:** questi parametri permettono di impostare i vincoli per l'autostart. Si possono quindi impostare le velocità e il numero di giri oltre i quali questi segnali vengono ritenuti validi per il campionamento.
- **Sampling:** it sets the sampling frequency, this means you can set the time between a sample and the next one. The inverse ratio of the sampling time is the sampling frequency. In theory the higher the sampling frequency the more precise the acquisition, but a higher frequency implies heavy calculations and huge files. You can choose values from 2 to 500 (i.e. from 0,02sec to 5sec, that means from 50 samples a second to 1 sample every 5 seconds)
GPS frequency is the one at which data received from the GPS are saved (maximum frequency is 10Hz). By baud rate you set transmission speed towards GPS and display. Baud rate towards display cannot be less than baud rate towards GPS.
- **Pulses:**
 - o **RMP Pulses:** It shows many pulses are generated from the central unit for each gear round, usually this value is equal to 1 or 2 depending on the bike make and model, you can set it with few tries, we suggest to double check the values of the parameter.

- **Speed 1:** This is the number of pulses for each pinion round. If the sensor is directly on the wheel, this is the number of pulses of each wheel round. This parameter changes drastically depending on the bike make and model varying from 1 to 30 or 40, this makes harder the configuration by tries, please double check its configuration.

WARNING: often speed signal is not available if the dashboard is not plugged!!

If you don't know how to set this parameter you can use the Danas Autocalibration tool

AUTOCALIBRATION

If you don't know how to set this parameter you can use the Danas Autocalibration tool. This tool exploits Danas2 and Dasy4 potentiality joined. Danas will be used to set up Dasy for measurement, and again Danas will process the acquired data.

The procedure is really easy and an interactive window will guide you throughout the whole process, anyway for completeness sake we summarize here the steps to follow.

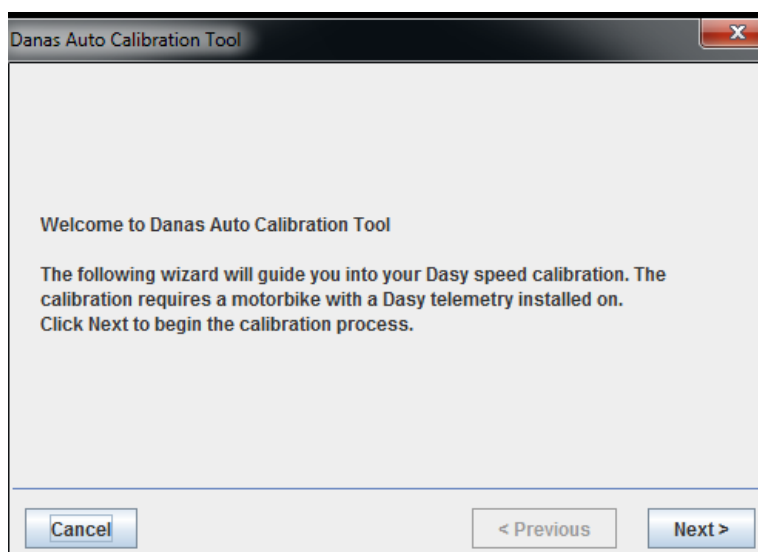


Fig. 95 – Initial window of autocalibration tool

- 1) Insert SD card in your PS and launch Autoalibartin tool from Settings menu
- 2) Set filename in SD (WARNING: all data will be removed!!)
- 3) Remove SD from PC (WARNING: always use 'safe remove')
- 4) Insert SD into Dasy and turn on the dashboard, DO NOT TUR ON ENGINE
- 5) Now on Dasy you'll see the power-on led flashing (only on the core system not on the remote if present)

- 6) Make manually turn the wheel until a precise number of rounds are performed (the more rounds you make the more accurate the measure; anyway you must perform more than 10 rounds)
- 7) At each wheel round for every pulse sensed the green led will turn on, and will be on for all the pulse long (only on the core system not on the remote if present)
- 8) At the end keep the wheel still for at least 10 seconds, the power on led will flash again (only on the core system not on the remote if present)
- 9) Remove SD from Dasy4
- 10) Insert SD in PC
- 11) Set the number of wheel rounds performed
- 12) Danas2.x will calculate precisely the number of pinion polses.

VIDEO MENU

Here you can access video functionalities. You can open the video window by the show menu, then 'Video Menu' is enabled.

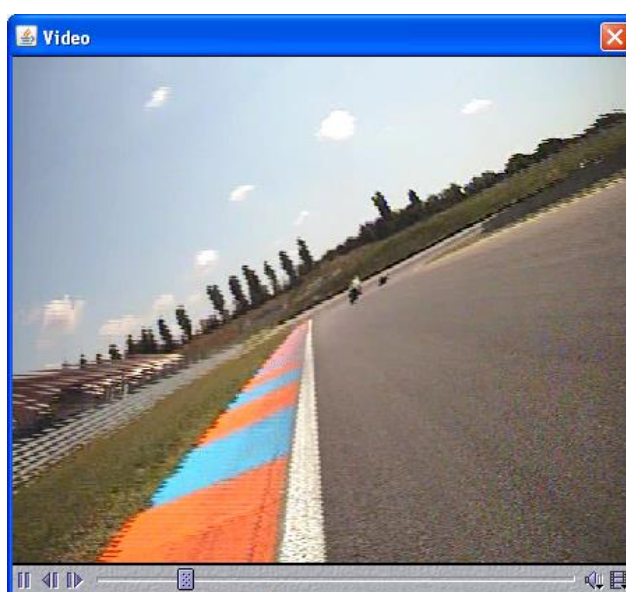
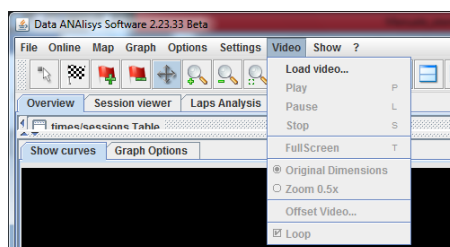


Fig. 96 – Video Menu and a Video

When you show the video window, automatically the default session/lap video will be loaded. You can choose:

- **Load video:** manually loads a video
- **play/stop/pause:** main function of the player
- **full screen:** sets the video full screen. To exit this function press ESC or use the mouse right button.
- **Original Dimensions / Zoom 0.5x:** here you choose video dimensions origin or scaled
- **Offset video:** you can set a delay so to re-sync data and video
- **Loop:** at the end of the video it will start again from begin

If you switch between Lap and Sessions mode, the video will switch accordingly.

SHOW MENU

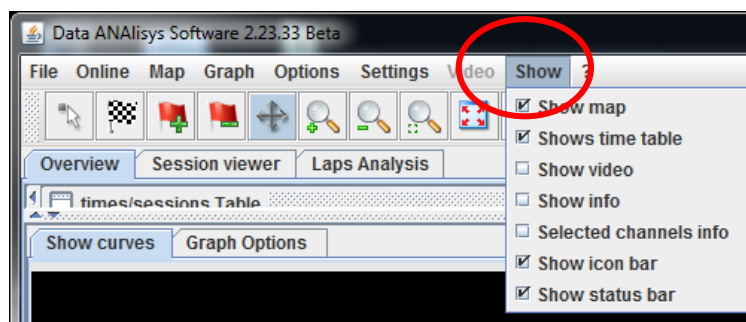


Fig. 97 – Show Menu

Here you can choose which windows are to be shown and if you want the icon bar and the status bar or not. If you hide the icon bar the use of the software will be more complex but is useful on small monitors.

SYNCHRONIZATION

Beneath you find a sample about synchronization. You can synchronize a video, the map and on graphs.

You have to activate cursors on the map and on the graph and activate video window.

When the video is in 'stop' you can move cursors on map or on graph or drag video position bar. All other cursors will move accordingly.

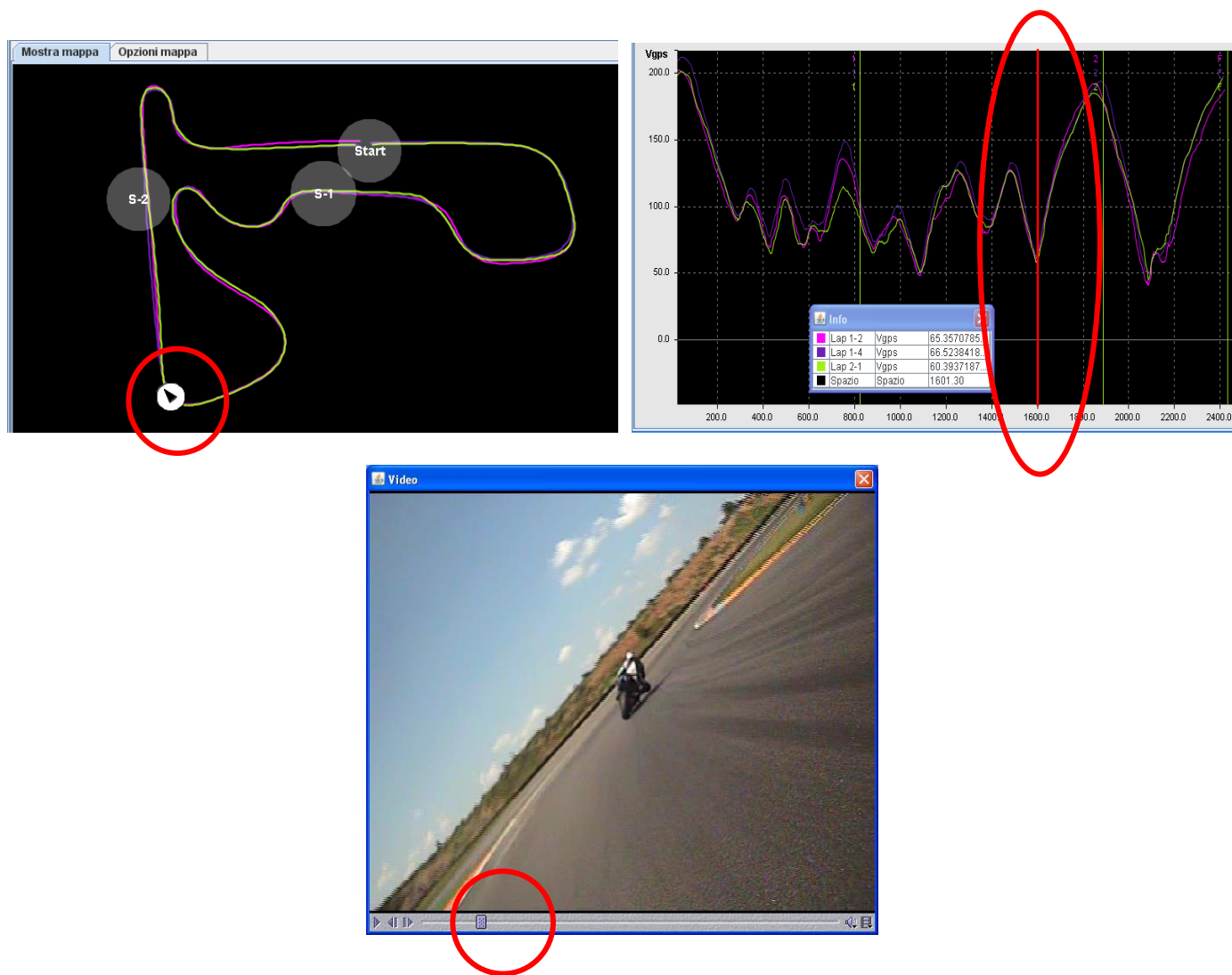


Fig. 98 - Synchronization

When the video is on 'play', map and graph cursors will follow automatically its position (and cannot be manually moved)

APPENDIX A – ANALOG CHANNELS

If you have a complex sensor the conversion can be not so easy, if you have for example a TPS signal, the output from the central unit doesn't cover the full range 0-5V, you have to choose wisely max and min values in order to plot on the graph what you like.

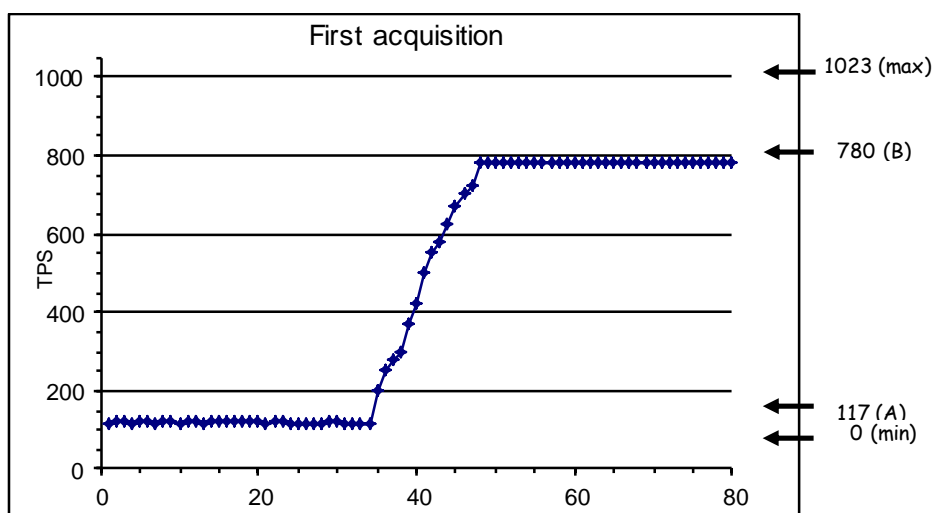
Let's have a look at an example:

You need to configure TPS sensor signal but you don't know voltage values corresponding to full throttle or completely closed. You can follow these steps:

- Set the values to 0 (min) and 1023 (max) [theoretical signal full range]
- Acquire with Dasy the full range of throttle position. [Set autostart on rear wheel speed then set the bike on a support and manually make the real wheel turn while moving the throttle full range]

WARNING: in some cases TSP signal varies if the engine is turned on. We suggest to compare the values of throttle closed with engine off and on. If these two values differ significantly, you need to perform a measurement with engine on while on a track

- Let's suppose we read values between 117 (A) and 780 (B). The graph will be compressed and difficult to be read.



- Let's suppose we want to represent values between 0 (C) and 100 (D)
- A transformation is needed in order to move max value from 780 (B) to 100 (D) and min value from 117 (A) to 0 (C). The same transformation will move the full scale in the two values (MAX and MIN) you are looking for.

$$\text{DELTA} = 1023 * 100 / (B - A)$$

e quindi :

$$\text{MIN} = - A * \text{DELTA} / (1023 - 0)$$

$$\text{MAX} = \text{DELTA} + \text{MIN} \text{ (be aware that MIN will be negative)}$$

In our example:

$$\text{DELTA} = 1023 * 100 / (780 - 117) = 154.2964$$

$$\text{MIN} = -117 * 154.2964 / 1023 = -17.64$$

$$\text{MAX} = 9,053 - 3,75 = 136.65$$

- Now if you set the found max and min values for TPS you'll have a graph with data varying between 0 and 100